

ANNALS OF MEDICAL HISTORY

PUBLISHED BIMONTHLY

NEW SERIES, VOL. V, No. 3

MAY, 1933

WHOLE No. 67

EDITOR

FRANCIS R. PACKARD, M.D., PHILADELPHIA, PA.

ASSOCIATE EDITORS

LE ROY CRUMMER, M.D.	Los Angeles
HARVEY CUSHING, M.D.	Boston
IRVING S. CUTTER, M.D.	Chicago
CHARLES L. DANA, M.D.	New York
GEORGE DOCK, M.D.	Pasadena
FIELDING H. GARRISON, M.D.	Baltimore
HENRY BARTON JACOBS, M.D.	Baltimore
HOWARD A. KELLY, M.D.	Baltimore
ARNOLD C. KLEBS, M.D.	Nyon
SAMUEL W. LAMBERT, M.D.	New York
THOMAS McCRAE, M.D.	Philadelphia
LEWIS STEPHEN PILCHER, M.D.	Brooklyn
SIR D'ARCY POWER, K.B.E., F.R.C.S.(ENG.), F.S.A.	London
DAVID RIESMAN, M.D.	Philadelphia
SIR HUMPHRY ROLLESTON, BART., G.C.V.O., M.D.	London
JOHN RUHRÄH, M.D.	Baltimore
CHARLES SINGER, M.D.	London
EDWARD C. STREETER, M.D.	Boston
WILLIAM H. WELCH, M.D.	Baltimore
CASEY A. WOOD, M.D.	Chicago

NEW YORK,

PAUL B. HOEBER, INC., PUBLISHERS

SEVENTY-SIX FIFTH AVENUE

ANNALS OF MEDICAL HISTORY

NEW SERIES, VOL. V, No. 3

MAY, 1933

WHOLE No. 67

CONTENTS

	PAGE
PORTRAIT OF WILLARD PARKER	Cover
PORTRAIT OF GEORGE E. GOODFELLOW	Frontispiece
WILLARD PARKER (PART I) JOHN RUHRÄH	205
REFLECTION OF ARABIAN MEDICINE AT SALERNO AND MONTPELLIER LUTFI M. SA'DI	215
ARABIAN MEDICINE AS REPRESENTED IN THE MEMOIRS OF USĀMAH IBN-MUNQIDH. DANA C. MUNRO AND CUSHMAN D. HAAGENSEN	226
GEORGE E. GOODFELLOW, FRONTIER SURGEON AND SOLDIER MILEY B. WESSON	236
A SHORT HISTORY OF THE SWEATING SICKNESS MANLEY BRADFORD SHAW	246
THE EARLIEST SUGGESTION OF THE USE OF COCAINE FOR LOCAL ANESTHESIA W. F. VON OETTINGEN	275
AN INTRODUCTION TO THE HISTORY OF WOMEN IN MEDICINE (PART I CON- TINUED). KATE C. HURD-MEAD	281
EDITORIAL	306
THE DOCTOR AS DIPLOMAT C. S. BUTLER	
BOOK REVIEWS	311
BRYAN: ROUNDABOUT HARLEY STREET, THE STORY OF SOME FAMOUS STREETS; FISCHER: BIOGRAPHISCHES LEXIKON DER HERVORRAGEN- DEN ARZTE DER LETZTEN 50 JAHRE; ZABARA: THE BOOK OF DELIGHT. HÄFLIGER: PHARMAZEUTISCHE ALTERTUMSKUNDE UND DIE SCHWEIZ- ERISCHE SAMMLUNG FÜR HISTORISCHES APOTHEKERWESEN AN DER UNIVERSITÄT BASEL; BILIKIEWICZ: DIE EMBRYOLOGIE IM ZEITALTER DES BAROCK UND DES ROKOKO; PUSEY: THE HISTORY OF DERMA- TOLOGY; BURGESS: THE BOOK OF MANCHESTER AND SALFORD; THOMS: CHAPTERS IN AMERICAN OBSTETRICS.	

Original articles are published only with the understanding that they are contributed exclusively to the ANNALS OF MEDICAL HISTORY. Manuscripts offered for publication, books for review, and all correspondence relating to the editorial management should be addressed to the Editor, Dr. FRANCIS R. PACKARD, 302 South 19th Street, Philadelphia, Pa.

Communications regarding subscriptions, reprints, and all matters regarding the business management of the ANNALS OF MEDICAL HISTORY should be addressed to the publishers, PAUL B. HOEBER, INC. 76 Fifth Avenue, New York City. [Cable address, Formed N. Y.]

The ANNALS OF MEDICAL HISTORY is published six times a year, the six issues comprising one volume. No advertising is carried. The subscription price is \$10.00 a year, foreign \$11.00. Current single numbers \$2.50 per copy. A few sets of first series, Volumes I-X, are available in parts as published at \$100.00 per set, or bound in boards, paper sides, canvas back, paper label, \$135.00 per set. Price on available single volumes or numbers will be quoted on request.

Entered as second-class matter, June 2, 1917, at the Post Office, New York, N. Y., under the Act of March 3, 1879

Copyright, 1933, by Paul B. Hoeber, Inc.

Frontispiece
Annals of Medical History
May, 1933



GEORGE E. GOODFELLOW

[1855-1910]



[From Schurigio: *Lithologia Historico-Medica*, Dresden, 1744.]

ANNALS OF MEDICAL HISTORY

NEW SERIES, VOLUME V

MAY, 1933

NUMBER 3

WILLARD PARKER

By JOHN RUHRÄH, M.D.

BALTIMORE, MD.

WILLARD PARKER was born at Lindborough, Hillsboro County, New Hampshire, September 2, 1800, and died in New York, April 25, 1884. The family had lived at Francistown, N. H., which has led to some errors in stating the place of his birth, but before he was born the family had moved to their new home. When he was about two years old he was taken to Chelmsford, Mass., where he spent his boyhood. He was named for an old Judge Willard, a leading lawyer in that part of the state. As he was the most promising of the children he was destined for the ministry, but as Dr. Draper said:

His religious nature inclined him to the profession of the ministry, but an incident in his freshman year happily diverted his thoughts toward a calling in which his mind escaped the fetters of dogmatic theology, and left his religious enthusiasm free to expend itself in practical Christianity.

He worked hard and taught school to earn money for his education and

went to Boston to study. Here he entered Harvard University in the class of 1826 and was graduated with that class. He and another student rented a room in Cambridge and proceeded to furnish it. A bed was essential and after buying one he found after counting his pennies that he could not afford to have it transported from Boston, so he carried it out to Cambridge himself. There he saw the skill of John Collins Warren who reduced a strangulated hernia in one of his class mates. He decided to abandon the ministry for medicine and got a job as interne at the Marine Hospital in Chelsea for \$12.00 a month and eventually, after two years' study, received his degree in medicine from Harvard in 1830.

At Harvard he became acquainted with Dr. Bowditch, at that time the leading lecturer at Harvard, and served as his assistant at the Massachusetts General Hospital. One of his matriculation cards, that in chemistry, is signed by Prof. Webster who was subsequently hanged for the murder of Professor Parkman.

He was married about 1828 or 1829 to Miss Caroline Sarah Allen of

Stirling, Mass., by whom he had two children born while he was at Pittsfield. Later on in life, some years

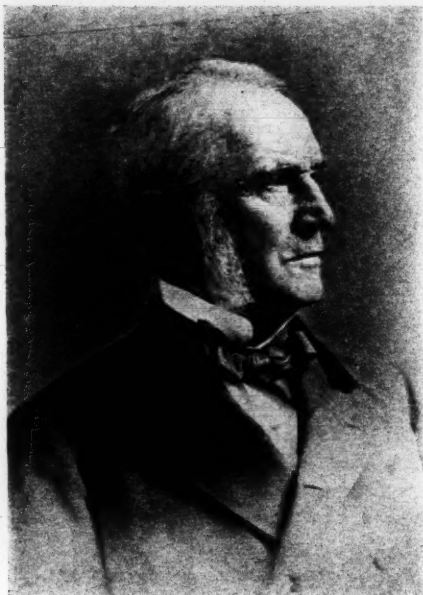


FIG. 1. WILLARD PARKER.

after the death of his first wife, he married a widow, a Mrs. Coit, of Hartford, Conn., whose maiden name was Mary Ann Bissell by whom he had a son and two daughters.

A hundred years ago advancement for those engaging in medical education was more rapid in America than now and scarce was the ink on his diploma dry when he went to Windsor, Vermont, to teach surgery in the new medical college there. Later he was appointed professor of anatomy in the Berkshire County Medical College at Pittsfield, Mass., dividing his time between the two places. Here he was thrown in contact with Alonzo Clark, Elisha Bartlett and Robert Watts, all of whom were destined to become professors in the College of Physicians and Surgeons

in New York. From 1832 to 1836 he was professor of surgery as well as anatomy and delivered two lectures a day. It was then that he was appointed professor of anatomy in Cincinnati.

His Cincinnati experience was a sad one. He went out in 1836 and taught there until 1839. Among his notes are records of his ministrations to the victims of a steamboat blowing up, possibly from a steamboat race, a popular indulgence of those days which not infrequently ended in disaster.

When he went out he took with him his first wife and two little girls, Katie and Ellen, the old nurse and a promising young medical student. When he came back, which was evidently just after his return from his trip to Europe during which the diary was written (and he used to relate how he waited until after night fall to do it), it was with one of the little girls only. The others had died of typhus fever. That little girl remembered the trip, most of which was made in a canal boat, and how one cold, damp evening her father stood her up on the table in the dim little saloon and fastened the cape of his big overcoat around her. She was only three at the time but afterwards told of looking up at him and how taking her forefinger she traced the tears down the wrinkles on his face.

In 1837 he was asked to apply for the position of professor of surgery in the College of Physicians and Surgeons in New York. This he declined to do and decided to go abroad to study in France. Of this trip there is no need to say anything as he has given a graphic account in his diary.

Shortly after his return from Europe, in 1837, he was made professor

of surgery in the College of Physicians and Surgeons, of New York, a post which he held until 1859. Along with this position he started to practice and for thirty years he had a large clientele. He did not attempt to specialize in any particular kind of surgery but treated every kind of case which came along.

With James R. Wood he reorganized the Alms House at Bellevue into a hospital which was the beginning of what is now Bellevue Hospital. He was one of the attending surgeons at this place and in 1856 was made surgeon to the New York Hospital and later on, with their establishment, of St. Luke's, the Roosevelt and Mt. Sinai Hospitals. With John O. Stone he organized the New York City Health Department. He took a great interest in the work of medical societies and in 1856 he was president of the New York Academy of Medicine. He was one of the first and for many years one of the most active members of the Pathological Society and of the Medical and Surgical Society. He also was active in various charity organizations and on one occasion delivered four lectures on hygiene at Plymouth Church in Brooklyn, then under Henry Ward Beecher.

In 1870 he resigned the active duties of professorship and was made Emeritus Professor of Surgery. The same year Princeton University conferred upon him the degree of Doctor of Laws.

He was one of the most successful operating surgeons of his day and was the first to do a cystotomy for irritable bladder (1850) and tied the subclavian artery five times. In 1864 he ligated the left subclavian artery inside the scalenus, together with the

common carotid and subclavian arteries for subclavian aneurysm.*

Less than seventy years ago patients with appendicitis either died or got well, frequently they died of "inflammation of the bowels." Parker's experience was that of others but the loss of such patients set him thinking and one night when he came home all broken up over the death of a little girl of ten, a favorite patient, he put his hands on his head and said to his wife (his second one): "If I have another patient like that I am going to operate. I am sure I know what to do." And operate he did, the first American surgeon to lead the way in the proper care of appendicitis. This was in 1864. He was unquestionably unaware of the fact that Mr. Hancock of London had in 1848 successfully operated on a patient similarly affected.

In those days medical education in America consisted largely of lectures. He introduced the clinical lecture into college instruction. He was a born teacher and his enthusiasm was contagious. Of his genius for teaching Dr. Draper said:

Here, unfettered by the restrictions exacted by the orderly arrangement of didactic discourse, he could give free play to the natural working of his own mind in the diagnosis and treatment of disease and injury. When he entered the amphitheatre his presence seemed to fill it; he rivetted attention; he had a magnetic power that instantly roused, so to speak, the polarity of every intelligence about him. His glance was an inspiration, and his voice like the voice of a prophet. His manner towards his patients commanded confidence and assured sympathy. He seemed often to touch the point of disease as with the spear of an Ithuriel, and to

* *Am. J. M. Sc.*, n.s. 47: 562, 1864.

invest the art of healing with the quality of a divine gift.

He was fond of impressing on his hearers the limitations of the cure of disease as contrasted with its prevention. Eager for new ideas and new methods he kept abreast of his times.

He had a keen interest in public health and his efforts in this direction were fruitful. He was a temperance reformer and believed that the reckless use of alcohol was one of the chief causes of physical degeneracy as well as poverty and crime. For many years he was President of the Inebriate Asylum of Binghampton. He was temperate in his habits but always had sherry on his table and generally drank a glass at dinner.

As his years increased he continued his activities and Dr. Daniel M. Stimson has told how on one occasion when he called Dr. Parker, who was his father-in-law, in consultation, the latter, then between seventy-five and eighty, beat him up the five flights of stairs to where the patient lay without any difficulty, while Stimson himself had to pause on arriving to get his breath.

When his health broke down during the last two years of his life he continued to see patients and was consulted up to the day of his death, which was on April 2, 1884, at his New York home, from cerebral hemorrhage.

During his life he collected an unusually fine library and in 1906 this was given by his son Willard Parker to the Medical Society of the County of Kings in Brooklyn. This collection numbered over 4000 volumes and covered all fields of medical learning. It contained many items of great interest in the line of early American medicine, files of early journals and a

number of rare classical works, such as the Frankfort 1621 edition of the complete works of Hippocrates, the Lyon 1652 edition of *Les Oeuvres d'Ambroise Paré* and so on.

Mary Howard Butler of New York, although a child when he died, remembers her grandfather very well.

He was such a "real person," so delightfully human, that he was beloved everywhere, for that as well as for the great good he did. A close bond existed between him and the grandchildren. My memory goes back to the early days when I could not reach up very high. When we went to see him in the wide old house in East 12th Street and were given the signal to go into his office, we would rush in and hug him around his legs (as far as we could reach) and then he would lift us each up in turn to kiss and to make much of. As you know children do not hug a person that way unless there is a wonderful sympathy between them!

He had a tall straight figure, six feet tall, sturdy and energetic, and to the end of his life used to go upstairs three steps at a time. He had a fine thoughtful face with straight features and an "air" about him, quite unconscious that went back to his early forebears. He wore side whiskers and later a beard which with the passing of the years became white. He was punctilious in his dress and always wore black broadcloth frock coat and a high standing collar with a wide black tie. In summer he wore broad soled low black shoes with white socks.

Mr. Willard Parker Butler, his grandson, has furnished accounts of some incidents which throw some light on his character.

Around the corner from his house, 41 East 12th street, there was a druggist, Herman Atwood, who filled most of his

prescriptions. One day a hypochondriac came to Dr. Parker to be treated. After his examination he wrote a prescription and told her to go to Atwood to have it filled. In two weeks she returned saying she was much improved and it was all owing to his wonderful medicine. He had prescribed aqua pura. He could trust to Atwood's discretion.

My grandfather was always doing things to entertain his grandchildren, and every Thanksgiving he had them to dinner and took them to the Minstrels where he hired a proscenium box for the occasion. He did not approve of the theatre for the young. One Thanksgiving he took us to Bryant's Minstrels where Dan Bryant was presenting a skit entitled "Daniel in the Bryant's Den." At one stage in the performance, the stage being dark and set for a room, Dan Bryant entered and said "Whenever I come into a strange place I always hang up my coat on the floor." Whereupon he took off his coat, folded it up and walked across the stage up to the proscenium box where Dr. Parker was sitting in the front. Now Dan Bryant had been a patient of the doctor, and almost all the audience knew him by sight. Dan Bryant deposited his coat in front of the doctor on the floor of the stage, then looked up and seeing who it was picked up his coat and walked off to the farthest corner of the stage, meanwhile eyeing the doctor suspiciously. Then he turned round, put down his coat and gave a look of triumph at the doctor! It brought down the house!

Dr. Charles Parke was one of the last office students under the old preceptor system, for which by the way much may be said. One day an elderly lady was in Dr. Parker's office and Parke was called to the door and given a specimen of urine to examine. He did so and returned to report that it consisted of almost pure albumen. He was astounded to see the patient so lively and apparently not much

affected. Dr. Parker smiled at the report. "Mr. Parke," he said, "I put the white of an egg in that myself to see whether you were doing your work properly."

Dr. Samuel Ward, long the leading physician in Albany, N. Y., had been a student in Dr. Parker's office (Dr. Ward as a young man was an army surgeon in the civil war and after the war he settled for a while in New York where he practiced and had an office in lower University Place). He had a case concerning which he was very anxious, and he decided he would go to see Dr. Parker and talk it over with him. It was late, a very cold night in February when this occurred to him but he went up to 41 East 12th St. and as there was still a light over the front door he rang the bell! The door was opened by George, the old servant and driver, who had evidently been routed out of bed. He asked if he could see the doctor, but George said, "No, the doctor has gone to bed." But seeing through the hall a light under the door of Dr. Parker's private office, he pleaded with George and asked him to see if the doctor, if still in his office, would see him. George went to the doctor's private office and to his surprise he saw Dr. Parker sitting in front of his big desk, on which was a bottle of Scotch whiskey, a tumbler half empty, a pitcher which seemed to contain hot water, and sugar and lemons. Dr. Parker said, "Sit down, Sam, I have just come from delivering a Temperance lecture (at some place, I have forgotten where), and I know of nothing that a man needs more at such a time than a hot whiskey toddy. George, go to the pantry and bring a tumbler for Dr. Ward."

This story was told by Dr. Ward's widow to Dr. Parker's grandson, Mr.

Willard Butler, who states, "I believe it to be true, as it was just like my grandfather."

Mr. Charles Butler, the architect and Parker's grandson, writes:

I remember him very well. He was a very handsome old man, over six feet tall, and solidly built. My mother used to bring my sister and me in to see him when we came to New York from Scarsdale for the day and we were generally taken for lunch to the Vienna Bakery, at 11th Street and Broadway, after calling on him at the East 12th Street house. He used to warn us against eating ice cream for the reason that it lowered the temperature of the stomach 66 degrees and, knowing that we were going to have ice cream for lunch, we preserved a discreet silence.

In 1885, six months after his death, Dr. William H. Draper, an intimate friend of long standing, delivered a memorial address before the New York Academy of Medicine.* This has been used in making an estimate of his character and influence.

He was a man of noble presence and wonderful charm of manner. His presence acted as if by magic on his patients. "It banished fear and inspired hope." His enthusiasm was unbounded. He believed in science and the healing art and he believed in himself. Always self-possessed, never flustered, never baffled nor disconcerted, he had the surgeon's temperament. He was a keen observer and unusually skilled in diagnosis. "He could not be called a learned man, but he was what some learned men never become, a wise man."

Dr. Parker had no gift for literary work and so failed to leave much in the way of records of what he had learned in his long practice. He did leave, however, a lasting impression of

American surgery and his name is found in Garrison's History of Medicine. His portrait hangs on the walls of the Library of the Surgeon General in Washington. But the greatest tribute paid to him was the erection of the Willard Parker Hospital for Infectious Diseases in New York City which stands as an outward and visible sign of the appreciation of his fellow men, of his services to humanity and as a monument to his place in medicine.

The Diary needs little or no comment. It is a vivid record of his impressions and it takes but scant imagination to relive his student days in Paris. There he evidently worked hard and came in contact with the most important teachers of his day. The reaction of his puritan mind to French life is most interesting and his brief comments speak volumes. To the present generation traveling rapidly, safely and in great luxury his account of the sea trip, not one hundred years ago, is a revelation.

This Diary is a valuable reminder of other days and deserves to be preserved as a fragment illustrating the *Wanderjahr* of a notable American surgeon.

1837—Cincinnati

Jan. 30. Left Cin. for Europe. Came by the way of Washington.

Feb. 5. Reached Washington. Put [up] at Gadsby's.

6. Mond. Spent this day at the Capitol. The edifice is beautiful; the Rotunda is grand, has 4 portae; there are 4 good paintings. Trumbul's: Surrender of Lord Cornwallis, of Burgoyne, the Declaration of Indeps. and General Washington resignation of his office of Major General.—the Devices Italian over the doors. Echo of the voice is remarkable. Library is large and

* Tr. M. Soc. N. York State, 1885, p. 328.

well fitted up. In the Senate the slave question came up with a flood of petitions; occupied the day. In the House petitions were presented. J. Q. Adams produced great excitement by having a petition from slaves to expel him and all *abolitionists*. Resolutions to censure and expel the Ex Presdt. were offered, the right to petition discussed. A. Triumphed.

7. Called upon Jackson, did not see him. Came to Baltimore in the afternoon, spent at Barnums. Saw N. R. Smith* in the evening; introduced to Dr. Cochran. Dr. S. shewed me his apparatus for fractures, it is Amsbury's simplified *New staff for stone*. Shewed me also the *Debris* of 5 or 6 calculi broken down by Jacobson's Inst.—he has succeeded well with it.

8. Started at 5 a.m. for Phila., came by stage all the way. Crossed the Susquehanna at Havre de Grace on foot. In this river Admiral Cochran did lie with his fleet in the last war, upon the Banks of this river his men committed their depredations upon the females. Reached Phila. in the night.

9. Stopped at Congress Hall. Dressed and breakfasted. Saw Chase, called on Leo McLellan, Coates—found neither. Saw Gibson and Horner. No news. Saw S. Cook, Walker, Dr. Clemster, Mr. Hamilton and Mr. Vaughn at the Atheneum. In his Book I placed my name, he gave me letters abroad. Saw Mr. Johnson

* N. Smith, 1762-1829, one of the most noted of American surgeons of his time, was professor in Dartmouth College. O. W. Holmes said he did not fill a chair but "a whole settee of professorships," viz. anatomy, surgery, chemistry and practice. He did many operations such as amputation of the knee joint.

and Martin. At one p.m. left for N. York, at 8 p.m. landed safe. Put up at the Mansion house, very cold.

10. Friday. Called upon Lawyer Davies, deposited money in the Union Bank. Paid I. T. Barrow 560 dolls from H. C. Brown of Ph., Saw Charlemagne. Bespoke passage. Saw Brown, Woorster, Drane, Birch and Lady.
11. This day expected to start for Providence & Boston at 3 p.m. but did not until Sunday at 10 a.m.
12. Sunday. Took the steamer President. no trouble, reached Prov. well.
13. Took the carrs at 8 for Boston. T'was very cold and windy. Engine froze 12 miles out from Boston and we stood 3½ hours, went to Boston, got new Engine, then got us in at 4½ p.m. Put up at the Tremont House. In evening saw Dr. Childs, Rockwell & Lady, Dr. Smith.
14. At 3 a.m. left for Sterling, got home at ½ pt. 10. Found my own family well. Remained here until Monday 20. Nothing of importance. (Mason, Spencer, Watts Letters.)
20. Caroline, Kate & myself started for Lowell. Called on Hannah. Went to Chelmsford, spent the night at Father's, all well.
21. Started for Boston by Lowell. Saw Dr. Bartlett, Kimball, Dalton. Dr. Kimball gave me a letter to Berard. Snowed much, as took the cars for Boston, arrived at 5, spent night at Whitman's. Saw Mr. & Mrs. Rice and Mary, Dr. Dupre, Bert & Jno. B., Mr. Davis. Brother Grenville, Jackson.
22. At 9 a.m. I started with Dickinson for New York via Providence. Beautiful day. At 1 p.m. we embarked on board the Provi-

- dence. Reached N. Y. at 7 the next morning.
23. This mng. very snowy, at 10 turned to severe rain storm, put up at the City Hotel. Immediately after Breakfast proceeded to business. Called upon the Agt. for the Packet, found he was not going until the first of March. Loss of the Erie. Paid passage 140 Dolls. Bot over shoes &c. In the evening Dr. White called to see me.
 24. Went to College. Saw Dr. Stevens. Lectured on ampns. saw Drs. Adams & Watson—performs the circular opr. exclusively—so the French. In evening Dr. Bedford & Webster called at 7, went to Dr. Stevens, had good time. Stevens shewed me a new gorget—Osteosarcoma. Aneurism of the External Iliac where the Lig was placed about the primitive and in 2 days the P. dies of peritoneal inflamn. bad subject—about 50, painter—Stevens thinks we may with as much safety cut into the perineum and all do as well. La Lemond & others have said fistula in ano was incurable.
 25. Saturday—this day I expected to be spending upon the ocean, the fates have otherwise decreed, received several calls. Bedford, Webster, Doane, White, Chapin, Buckingham, &c. &c. Wooster, Watts.
 26. Sunday. Attended meeting at Mr. Dewey's, heard an admirable discourse upon keeping the Body in *subjection* to the mind. Dined at I. Mowris. Walked out afterward toward Greenwich. Called at Prichard's, saw Her, who was Rebecca Phillips. Sick with Rheumatic Fever. Heard Mr. Dewey again in the evening. Called at Dr. Doane's. Saw there Webster &c, talked some of Geneva.
 27. Dined at Mr. St. John's, had magnificent dinner; had Hauc,
- Medeira, Sherry, Champaigne for wines. Mrs. St. John has a splendid collection of Shells and is a good Choncologist. Operated upon Mrs. Brown & George and excised their tonsils, the instrument I like.
28. Dull day. This mng. called upon Jones Ring Co. of Prime Ward & King. bot Bills of exchange on Hortinger. Got 500 centimes for a dollar and bill stands for 3140 Dolls. Dined with Bedford, greater talker, had very good dinner. This day took my leave of my friends, wrote letter to wife & inclosed Bill of Exchange.
- Mar. 1. Another winter has left us. What has it availed me? Am I better in a moral, intellectual or religious point of view? I am not what I should be, I can do better & more, by my own conscience than I stand condemned unless I improve.
- Called early on Dr. Stevens. He spoke to me about the university, wished me to become a candidate, said called yesterday to see Dr. Matthews about me. His views about a school agree with my own. He wished me to remain in the city awhile longer & obtain the situation. I said No & made my congé. At 10 min. before 11 A.M. I embarked on board the Charlemagne, several came to take leave of me. At eleven the Steamer Statesman took us outside the hook below the Narrows. Long Island was the last land we saw. On Staten Island, which is on the side toward Jersey, we saw many beautiful residences. At the southeastern extremity of Long I. was lost the Mexico and 104 persons. Our Pilot left us about 2 p.m.; we had a very good breeze from the N. East. Crew 14. 2 stewards. 2 mates & our

Captain, Richardson of Salem, Mass., good man. Crew some intoxicated. No liquor allowed. 2d Steward not good. No spirit drank by the crew. 7 cabin passengers. 4 packets sailed from New York this day viz. Garrick, South America & Philadelphia, for England & Charlemagne for Havre, the whole a new & splendid scene. The unfurling of sails, the run of the men at the order of the officer, all which to me was incomprehensible. Friends leaving friends & the thoughts that clustered around the idea of leaving one's native shore, & one's home and the committing of one's self to a new & untried element, all conspire to give the scene an overwhelming interest. What joy is felt in the confidence of a common & all powerful Father.

2. We have now been 24 hours riding over the billowey deep. Last evening I spent some time in watching the splendid exhibition of phosphorescence; upon each side of the vessel were seen balls of fire full of light, splendid but what does it mean? At 11 p.m. retired to rest—, how new the scene, between me & the mighty ocean was a plank's distance, here methought, life & death almost meet. But I slept sweetly, at 7 I rose, & made my toilet but not having on what the sailors call 'sea legs' the motion of the vessel & my own were somewhat *antipodic*. As soon as possible I mounted on deck. My God what an immense vastness! Night had returned us morning but with it not the land, the horizon was bounded by the great water. The wind was N.E. & the world could be seen "looming up" as it is called, there is something in this

I do not understand. I regret I did not see the sun as he came fresh washed from his watery bed. Cold, thermometer has not been above 23°. The Phila. was seen from mast head & merely her sails. South America leads the compt. only a few miles from us. Garrick is not much ahead. Winds light. This evening much more breeze, some snow. Barometer falling, more warm.

3. Friday. The night I have passed well. Rose at 8, Breakfast at 9 a.m. I went into the round house, was well. Soon had an indiscrible sensation in the epigastrium, then nausea & vomiting. La Maladie de mer was fast upon me & I was certain of no escape from her sure grasp. I ate not, felt depressed, listless yet I gloried in the enterprise. When in my berth I was not much sick but couldn't do anything. Most of the passengers were like myself, Dickinson least sick. St. John *very bad*. Wind *very fresh* from the N.W. sea very rough, great motion to vessel.
4. Saturday. More sick, wind more fresh and veering to the N.E. We are in G. Stream, more warm—this day got on deck, the elements in great commotion, & to us there is no rest, while stupified in admiration of the display of omnipotence in unrestrained grandeur. I was aroused to witness a new scene. It was a school of porpoises tumbling through and over the waves. 30 or 40 in number, beautiful sight. What their destination, their purpose? are they prompted by man's insatiable curiosity? and do they ride the stormy billows despite of all danger? Can they but gratify the all conquering, the all compromising appetite? Now my

thots turn to my dear native land—My own little home, my heaven upon earth, the abode of an *unsuspicious confidence* and an *elevated love*. My dear wife and daughters, highest earthy objects of my affection. The thots of ye, how, how dear, how sacred! What delightful emotions, ye call up. I am with ye, & my very soul swells with gratitude to our dear Father who holds us as in the hollow of his hand, he will watch over us according to his good pleasure. This, the day of my country's change of Rulers—May it prove good to all.

- 5th. Sunday. I rested somewhat last night, this morn. squally. Strong head winds, many of the sails taken in; mainsail & main topsl. Closed reefed. I attempted to gain the deck, the motion of the vessel, the wind, the terrific grandeur of the sea made me retreat. What a sublime spectacle, the vessel rocking, pitching, tossing upon the perturbed bosom of the billowy deep, now poising herself at a dizzy height & then dropping as by magic into the deep buried embrace of old

ocean. She seemed the merest plaything, & yet she is an object of great wonder & admiration, how she reels & mounts & buffets the raging billows, shakes herself clear of its attack & moves on on her destined course. Most of us sick & the day has been spent in surly demureness. At 8 this evening we had a tremendous gale from the N.E. Capt. never knew so hard a one from that point. Continuous all night, all hands upon deck, sails taken in except enough to lay too upon, the ship tossed frightfully & writhed & creaked at every joint. I wish I had Virgil to read in bed. I lie in my Berth & soon was rocked by the ocean & lulled by the tempest into a tranquil sleep. Oh, sleep, sweet restorer of nature, thou balmy opiate of the anxious mind. In my heavenly Father I repose all confidence, what a high and glorious prerogative is that consciousness of an overruling Providence, which we feel to be a part of ourselves and know to be endorsed over by "holy writ."

(To Be Continued)



REFLECTION OF ARABIAN MEDICINE AT SALERNO AND MONTPELLIER*

By LUTFI M. SA'DI, M.D.

DETROIT, MICH.

INTRODUCTION

RATIONAL medicine had its initial start with the Greeks after its transition through Egyptian, Chinese, Hindu and Iranian channels, but it did not come into its own until it fell into the hands of Hippocrates. It was under the illustrious son of the priest of the Aesculapian temple at Cos and his disciples that medicine laid aside its theurgic and superstitious mantle and began to lay a classical and sound foundation built on observation and experiment.

This Hellenic mantle was to be further trimmed by the Hellenistic school at Alexandria. Herophilus, Erasistratus and later Galen and others of the latter school did much of this work. The miraculous feature of their work is to be found in its altruistic nature. Contrast with that, the stress that the Romans of a later day laid upon material interests in their pursuit and practice of medicine, thus eclipsing in their efforts the purely scientific spirit of the earlier Greeks.

Following the decline of the Roman civilization the Latin West broke away from Greek science and the hiatus was further widened by the triumph of the Church and the feudal system. Thus from the fifth to the latter part of the ninth century, monastic medicine and faith healing held sway in Latin Europe.

But while Western Europe was led astray into the darkest period of civilization, content in contemplation

of celestial rewards and of "soul salvation," the advent of Islam was providing the Arabs with the necessary incentive for consolidation into an efficient army. Their subsequent conquest was complete from a military point of view, and brought in its wake a mastery of things scientific, cultural and spiritual as well.

After steadily sinking lower and lower into barbarism, Christian Europe had reached the darkest depths of ignorance and degradation when the cities of the Saracenic world, Baghdad, Cairo, Cordova, Toledo, were growing centres of civilisation and intellectual activity. It was there that the new life arose which was to grow into a new phase of human evolution. From the time when the influence of their culture made itself felt, began the stirring of a new life.¹

CHART I
CHRONOLOGICAL DATA OF THE ARABIAN DYNASTIES
Pre-Islamic and Islamic

Name	Date	Capital
Pre-Islamic		
Sabaeen.....	800-115 B.C.	Sirwah & Ma'rib
Kalabean.....	? - ? ?	Not known
Minaeen.....	? - ? ?	Not known
Himyarites.....	115 B.C.-250 A.D.	Ma'rib
Nabatean.....	200 B.C.-250 A.D.	Palmyra
Islamic		
Mohamed & the Four Caliphs.	630-656 A.D.	Medina
Umayyad.....	661-750 A.D.	Damascus
Abassid.....	750-850 A.D.	Baghdad
Umayyad of the West.....	711-1492 A.D.	Cordova, Spain
Fatimites } ...	969-1171 A.D.	Cairo, Egypt
Ayoubean } ...	1171-1250 A.D.	
Mamelukes } ...	1250-1517 A.D.	

During the Umayyad Dynasty in Damascus (661-750 A.D.) the move-

* Read before the Victor Vaughan Society of History of Medicine, University of Michigan, Ann Arbor, Oct. 9, 1931.

ment was inaugurated to assimilate Greek culture and science, and to establish schools, libraries and hospitals. Again, during the Abassid Dynasty (750-850 A.D.) the Caliphs were the patrons of learning and art. Their ministers, as well as others of their courts, strove to outdo their masters by unstinting endowments towards research work, establishing hospitals, schools and obtaining rare manuscripts. Quite often famed scholars, scientists or rare books were levied as the primary prizes of conquest. The highest posts in the empire were awarded to leaders in science and art. In this manner a spirit of tolerance was fostered toward the academies and schools of medicine on the shores of the Euphrates and Tigris so that this period was immortalized as the "Golden Age."

Here at the College of Translators (Bayt-al-Hikma, i.e. House of Wisdom), a host of Nestorian physicians, already versed in Alexandrine medicine, began the translations from Greek to Syriac and to Arabic, of Hippocrates, Galen, Euclid, Archimedes and other outstanding scientists.

Under the Arabs we see Cordova, in Spain, enjoying a similar transformation and destined to become the renowned capital of learning in the West. No less important were the roles played by Seville and Toledo.

Not only did they assimilate all that there was of Greek science but they took it at a point of decadence and made it most vital. In their own commentaries and energetic research there is a decided improvement.

As to the scientific contributions of the Middle Ages Sarton says: "The most valuable of all, the most original and the most pregnant, were written in Arabic."²

With this brief introduction I now proceed to the Salernitan School.

SCHOOL OF SALERNO

Egypt in her pride had sent thee, Caesar, winter roses as a rare gift. But as the sailor from Memphis came near to thy city he thought scorn of the Pharaohs, so beautiful was the Spring and odorous Flora's grace, and the glory of our Paestan country, so sweetly did the pathway blush with trailing garlands wherever his glance or step might fall in his wanderings.³

While monastic healing was dominant in Latin Europe, medical historians speak of the existence at the beginning of the ninth century of a health resort enclosing a medical school of comparatively outstanding value. This resort, basking on the beautiful Gulf of Paestum and eminently endowed with all the natural elements that are conducive to good health, was the beautiful city of Salerno, about thirty-five miles southeast of Naples.

From its position on the shores of the Gulf of Paestum, Salerno was destined by Nature and location to play an important part in the Renaissance. Its proximity to Sicily, one of the outposts of Arab dominion, laid it open to the raids of the Arabs. These were dual in nature, one military, the other cultural. It is with the latter that we have to deal.

Not far from Salerno, and closer to Naples, was the Benedictine monastery of Monte Cassino. Hence the contact with Latin influence. It was this monastery, founded by St. Benedict, that had preceded Salerno as a medical center. It was here also, any other influence being conspicuously absent, that monastic medicine or faith healing had full sway, un-

hampered and supreme. We learn from the records of Desiderius, one of its abbots, that:

Henry the Second, Emperor of Bavaria, was believed to be afflicted with the stone and came to Monte Cassino for a cure. Henry was a prominent monarch, and St. Benedict apparently not wishing to cause him any undue inconvenience, himself exerted his special power and removed the stone by lithotomy, while the patient was asleep, and then healed the wound at once. That this was done was proven by the fact that when the Emperor awoke, the stone was in his hand. What more could be desired?⁴

The nearness of Salerno to the Byzantine Reggio and Otranto, remnants of "Magna Graeca" where Greek was the everyday language, on the one hand, and to Sicily under Arab rule (829-1060 A.D.) on the other hand, placed it directly in touch with the two systems, the Byzantine and the Arabian.

Hence the popular legend about the founding of the School of Salerno, where four physicians, we are told, a Greek, a Latin, an Arab and a Jew, met frequently and decided to establish this school, which was destined to become the mother of all European universities.

The Arab invasion of Sicily in 827 A.D. and their subsequent penetration to various sections of Italy, including Rome itself, promoted the earliest intercourse between the two hostile racial groups.

Thus two civilizations, the Arab and the Latin, were brought closer together, and they both gave a needed stimulus to the already stagnant arts and sciences of Europe.

Significant also to the medical history of Europe, was the experience of the Crusaders with the Saracens in

the East. It is an historical fact that they mixed freely during truces and the intervals of peace. We are told, to

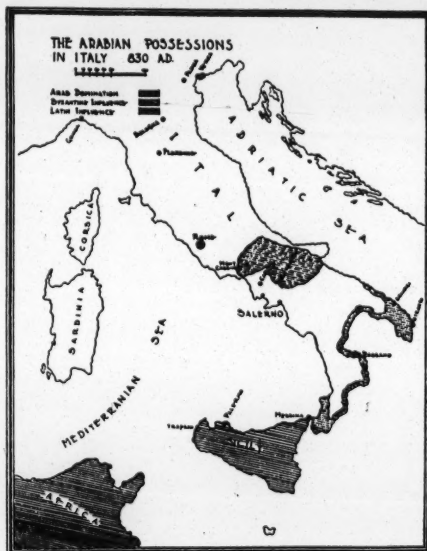


FIG. 1. MAP OF ITALY IN 830 A.D. SHOWING GEOGRAPHICAL PROXIMITY OF SALERNO TO GREEK, LATIN AND ARAB INFLUENCE.

relate from a famous episode, that Saladdin loaned his physician to Richard Coeur de Lion, when the latter became sick. Moreover, many of the Crusaders, returning home, tarried at the beautiful resort of Salerno either for rest from the fatigues of their journeys or for the cure of some recurrent malady or wound; and they doubtless brought to Salerno some of the culture of the East including a certain knowledge of the medical art.

A quotation from the Memoirs of Usamah, translated recently by Professor Philip K. Hitti of Princeton University, will serve to illustrate the comparative features of Arabian and European medical practice. Usamah Ibn-Munqidh was an Arab poet knight, born in 1095 A.D. at the Castle of Shayzar in Northern Syria. While not a physician, he relates in

his memoirs many incidents of medical practice in which we notice with amazement the crude methods of the Frankish doctors:

The lord of al Munaytirah, he relates, wrote to my uncle asking him to dispatch a physician to treat certain sick persons among his people. My uncle sent him a Christian physician named Thabit. Thabit was absent but ten days when he returned. So we said to him, "How quickly hast thou healed thy patients!" He said:

"They brought before me a knight in whose leg an abscess had grown; and a woman afflicted with imbecility. To the knight I applied a small poultice until the abscess opened and became well; and the woman I put on a diet and made her humor wet. Then a Frankish physician came to them and said, 'This man knows nothing about treating them.' He then said to the knight, 'Which wouldst thou prefer, living with one leg or dying with two?' The latter replied, 'Living with one leg.' The physician said, 'Bring me a strong knight and a sharp ax.' A knight came with the ax. I was standing by. Then the physician laid the leg of the patient on a block of wood and bade the knight strike his leg with the ax and chop it off at one blow. Accordingly he struck it—while I was looking on—one blow, but the leg was not severed. He dealt another blow, upon which the marrow of the leg flowed out and the patient died on the spot. He then examined the woman and said, 'This is a woman in whose head there is a devil which has possessed her. Shave off her hair.' Accordingly they shaved it off and the woman began once more to eat their ordinary diet—garlic and mustard. Her imbecility took a turn for the worse. The physician then said, 'The devil has penetrated through her head.' He therefore took a razor, made a deep cruciform incision on it, peeled off the skin at the middle of the incision until the bone of the skull was exposed and rubbed it with salt. The

woman also expired instantly. Thereupon I asked them whether my services were needed any longer, and when they replied in the negative I returned home, having learned of their medicine what I knew not before."⁶

Salerno had no ecclesiastical affiliations. The clerical status already in vogue in medieval schools as a primary qualification for the study of medicine was not required at this institution.

But, as Sudhoff contends: "Medical scholarship, literary erudition, profuse learning and the recreation of medical literature—such things were not sought after, at all in early Salerno,"⁷ in order to entitle it to be called *Civitas Hippocratica* claimed for it by some to imply adherence to the famous master.

About the time of the Norman conquest, in 1075 A.D. we encounter an eminent Arabic Latinizer whose name is predominantly connected with the School of Salerno and its rise to importance, namely Constantinus Africanus, who was called the "Miracle man from the Orient."

This Carthaginian physician who had previously travelled through Egypt and Syria came to Salerno under the patronage of Robert Guiscard, the Norman conqueror. Very little is known about his early history, and historians are at variance as to his nativity. That he became a Christian in order to avoid persecution is commonly supposed. As a native of Carthage, which was Arabized long before Salerno became famous, it is not unlikely, in my opinion, that he was an Arab. Moreover, I must call your attention to the fact that the style of Latin in which he rendered his Arabic translations was barbarous. This tends to indicate that Latin was not his native tongue. I am not alone in this

opinion for Max Meyerhoff also believes that Constantine was an Arab.⁷

The translation of the medical and philosophical manuscripts absorbed all the years of his activity before and after Salerno knew him. He spent his last years as a monk in the Benedictine monastery at Monte Cassino where he died in 1087 A.D. To Salerno he introduced, among other works, his "Pantegni," "the whole art," which was in reality the Royal Book ("Al-Maleki") of Ali Abbas, an encyclopedic work of medicine and surgery. It is estimated that the total of the works translated by him reach the sum of almost two score texts on medicine and philosophy. They were received most favorably by the existing medical school of Salerno. Being far superior to the early Salernitan system or anything else then available, they forthwith found ready application. They played an important role not only in Arabizing the School of Salerno but also in subsequently influencing the medical thought of Western Europe.

According to Sudhoff the Saracens had been in Sicily for six generations.

As Saracen settlements were not wanting in Southern Italy, one is forced to the conclusion that Arabic medicine was interdicted or even tabooed at Salerno and through the rest of Italy. For these reasons, Constantine kept the names of the real authors of his main works, the Pantegni and the briefer Viaticus (advisory medical compends for travelers), a secret and published them under the protection of his own name, a sort of literary shield afforded by his brotherhood in the order of the Friars of Monte Cassino. The real authors of these works were Hali Abbas and Ibn al Dschazzar.⁸ (Al Jazzar).

In support of this theory, it is noteworthy that the anti-Moslem senti-

ment of medieval Europe at this time was engendered and intensified by the Crusades; and in all probability it had also unfortunately crept into the fields of science and culture.

A comparison of the Pantegni with Ali Abbas's Royal Book shows a remarkable sameness. In fact, the "Pantegni" faithfully followed the Royal Book in dealing with anatomy, internal medicine (fevers, symptoms, prognosis), uroscopy, dietetics, surgery and obstetrics. This is particularly true of anatomy.

Porcine dissection (so described from the resemblance of the inner organs of pigs to those of humans), which was practiced at early Salerno, was occasional and crude. Constantine revolutionized the study of anatomy by stressing the importance of dissection as an essential feature of the course. This was instrumental in sowing the seed for the methodic dissection of animals and thus transforming the course from its hitherto theoretical character into one of an objective and demonstrative nature. This led further, according to some authorities, to the dissection of human cadavers at Salerno and elsewhere.

That Salerno began to stress the importance of bedside medicine after the coming of Constantine may be traced to the influence of Ali Abbas. Counting the pulse, examination of the urine, classifying the fevers, clinical annotations, these all found complete emphasis only after Constantine's influence came to be felt on Salerno, i. e. after the middle of the eleventh century. The pharmacopeia and dietetics of that period also began to show signs of improvement in adopting the delicious syrups and juleps. Many oriental spices can very well be attributed to the same influence as being

drawn from Arabic materia medica and polypharmacy.

The "Flores Diaetarum" of John

The "Pantegni" of Constantine Africanus served as the forerunner for the maturer surgical works that suc-



FIG. 2. PICTURES OF OPERATIONS PERFORMED AT SALERNUM IN THE 13TH CENTURY.

of St. Paul is undoubtedly taken mostly from the "Pantegni" of Constantine and partly from "Dioeta" of Ishaq-al-Yehudi (Israili).

Fevers are described by Constantine as effemera, hectic and putrid, and his portrayals of many other diseases are likewise identical with those of the Royal Book of Ali Abbas.

ceeded it in high esteem at Salerno. This is illustrated by the so-called "Bamberger Surgery" discovered by Sudhoff at the Royal Library at Bamberg, and the "Surgery of Roger," the latter being a work credited to a highly reputable surgeon of the twelfth century named Roger Frugardi. Both of these excelled the "Pantegni" and

the "Surgery of Roger" was the most excellent of the three.

The "Bamberger Surgery" seems to be comprised, in part, of a collection of a large number of unrelated experiences by Italian surgeons of the twelfth century. But for the major part and prominently evident in this work are whole paragraphs taken from the Pantegni's section on surgery. This also is to be found in the later and more comprehensive Surgery of Roger where Abu-l-Qasim and Avicenna are considerably imitated. This was due, indirectly, to the influence of the Toledo College of Translators.

According to Hirschberg¹⁰ Constantine's "Liber de Oculis" is nothing less than the reproduction of the ophthalmology of Hunain ibn Ishaq, the great Arab pioneer who worked under the Abassids (809-77 A.D.). Constantine is said to have refrained from giving credit to the Arabs as being the source of his translations.

"Trotula," a Salernitan text on obstetrics, was chiefly influenced by Constantine's translations of "Al-Maleki" as a comparison of this book with the second section of the work of Ali Abbas will show. The practice of obstetrics is said to have been left mostly to the women who were able to qualify as midwives; hence the name "Dame Trot" or "Mother Trot" who is supposed to have attained celebrity as an *accoucheuse*.

The decline of this great center of medical knowledge is attributed to more than one cause. Falling into the path of Henry VI of Hohenstauffen in the course of his conquest is one, but the most important reason was the coming into prominence of the schools of Montpellier, Padua and Bologna. The first was fast becoming the field of

transplantation of later Arabic medical literature through the medium of the College of Translators of Toledo.



FIG. 3. CARLO D'ANGIO, KING OF SICILY, RECEIVES FROM THE HANDS OF HIS AMBASSADOR THE MSS OF RHazes WHICH HE HAD REQUESTED FROM THE CALIPH OF TUNIS. IN THE LOWER PICTURE CARLO GIVES BACK TO THE HEBREW DOCTOR FARADSCH THE MODEL OF THE RHazes MS WITH THE DUTY OF MAKING A TRANSLATION OF IT. IN THE LOWER PART OF THE FIRST WE SEE FARADSCH, WHO IS PREPARING FOR THE WORK. (COURTESY OF DR. ARTURO CASTIGLIONE.)

Salerno continued to exist as a school until 1811 A.D. when having deteriorated into a diploma-manufacturing center, Napoleon I found it expedient to close its doors forever.

From the foregoing, we can readily see that Salerno was not an epoch-making school, nor did it widen the horizon of medicine by any revolutionizing discovery. Its services seemed to lie in its being an indispensable link between the oriental and occidental schools of medicine prior to the Renaissance. Thus for two centuries Salerno functioned primarily as the custodian of the continuity of medical

thought, later transferring this function to the schools of Montpellier, Bologna, Padua and others during France. They continued their victorious march far into the interior until they were halted at Tours in 732

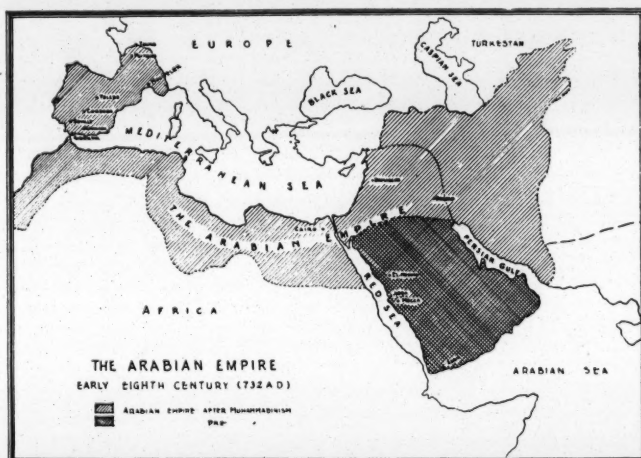


FIG. 4. MAP COVERING 100 YEARS OF GROWTH OF ARABIAN POWER FROM THE DEATH OF MOHAMMED.

the Renaissance and after.

THE SCHOOL OF MONTPELLIER

To estimate the influence of Arabic medicine on Western Europe in general and on the celebrated School of Montpellier in particular, one must begin with that historic drama of the crossing of the Mediterranean from Africa in 711 A.D. by Tariq. The famous Mount and Straits of Gibraltar derive their appellation from this invincible Arab invader (Jabal, Arabic for Mount and Tariq welded to Gibraltar).

With a few thousand followers, having crossed the Straits now bearing his name, this leader then burned his ships and turning to his men, uttered the Arabic equivalent of these historic words: "The enemy is before you, the sea is behind you. Choose ye one of the two." Choosing the former, this dynamic band overran Spain and Portugal and crossing the Pyrenees, penetrated into Southern and Western

A.D. by Charles Martel whose nickname, "the hammer," commemorated that incident. Thereafter the tidal wave of their invasion began to recede. Had they not been checked at Tours the map of the world would have been considerably different; different to an extent no one can even venture to visualize.

With this brief introduction let us proceed to study the part that this invasion was to play in the evolution of the School of Montpellier.

As to the history of Montpellier before the eighth century there is hardly a trace. We know that in the early part of that century it was a small village of no cultural or scientific importance or identity. Its position in the southern part of France near the Mediterranean shores, located on the highway between Spain and Italy, made it the stopping place for travelers from both countries which at a later time were to develop into centers of Arabic and Latin cultures respectively.

Charles Martel overran many towns and villages in the course of his conquests and one of these was Maguelone. The inhabitants of this and other conquered places, thus rendered homeless, made their way to Montpellier. They were of various creeds and nationalities and Montpellier harbored them all. It grew in prosperity.

By the eleventh century it commenced to acquire additional importance. Its wise and tolerant rulers, the Guilhems, by setting no handicaps on religion, nationality or trade, gave the city an enviable reputation. Learned men from various lands and of varying creeds and nationalities flocked to this haven of security and freedom and the seeds of a great institution of learning were sown. In this way Montpellier rose from an obscure village to become a cosmopolitan center of not only commercial importance but scientific and cultural as well. In this way also, the infant school of Montpellier had its beginnings.

Chief among the source of this scientific and cultural awakening was Toledo of Andalusia. The latter, for a long time the sanctuary of Arabian science and art, sharing with Seville and Cordova as educational seats since the advent of the Arabs in Spain, was the stage of a great literary activity from the middle of the twelfth to the middle of the thirteenth century. This was due to the establishment there of a college of translators by Archbishop Raymond. It was at this place that Gerard of Cremona, the Lombard, spent the greater part of his life translating Greek and Arabic masterpieces, seventy in number. Hippocrates, Galen, Serapion, Rhazes, Abu-l-Qasim and Avicenna were among his subjects. His transla-

tions though faulty, inspired others who improved upon them.

About the end of the twelfth century, however, the intolerance of the Spanish rulers was the cause of the decline of Arabic civilization in this Western outpost of Islamic dominion. Christian, Jewish and even Mohammedan scholars, the exponents of art and science, migrated in large numbers turning their eyes toward the land beyond the Pyrenees. So it came about that what was Spain's loss reacted to the profit of Montpellier where the greater number of these scholars settled. This was indeed an immeasurable factor in the rapid growth of Montpellier as a great center of learning.

Furthermore, Guilhem VIII, wise exponent of a ruling house that had participated in the Crusades and probably assimilated Arab culture and civilization, took forward steps, at the close of the twelfth century, to create an atmosphere of learning broadly tolerant of, and attractive to many medical scholars regardless of their creed or nationality.

Hand in hand with this growing prosperity and enviable freedom of effort the art of medicine flourished rapidly. At this time we encounter the beneficial influence of the Church which played no small part in the early life of this infant school. Cardinal Conrad, sent here by the Pope in 1220, set about the drafting of a charter with the object of systematizing the medical curriculum. This was called the "Charter of Conrad."

A papal edict in 1289 raised the School of Montpellier to the rank of a university.

The curriculum of this school in the middle of the fourteenth century is a faithful reflection of the influence of the Arabs, emanating from Toledo

and Cordova on the one side, and from Salerno on the other. Here again we note that the official courses were

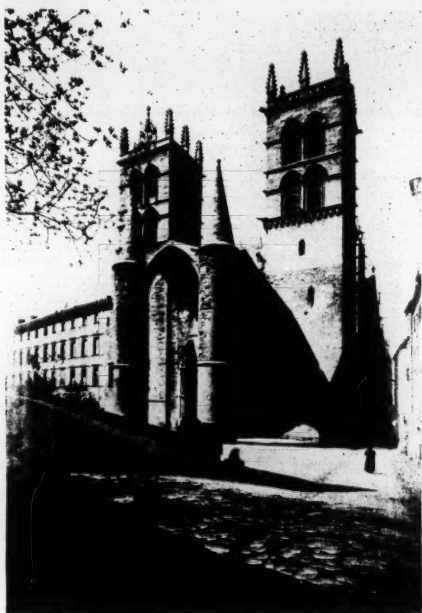


FIG. 5. CATHEDRAL AND MEDICAL SCHOOL OF MONTPELLIER.

composed of Avicenna (Ibn Sina), Johannitus (Hunain ibn Ishaq), Galen and Hippocrates, the latter two being rehabilitated in an Arabic garb.

Thus, whichever way one turned, one was bound to encounter the spirits of Avicenna, Rhazes, Ali Abbas and other great lights in the Arabian firmament of medical achievement.

Of the outstanding characters who were prominent in the destiny of Montpellier, Gerard of Cremona, through his translations, indirectly exerted the same enormous influence on this school as Constantinus Africanus, many years earlier, played on Salerno.

Various notable Arabists had a more direct touch with this medieval school. One of the earliest, Raymond

Lully, sought to convert the Moslems of Northern Africa and for that purpose acquired the Arabic language. Instead of converts to Christianity he gained for Europe a valuable knowledge of the chemistry of the Arabs.

Arnold of Villanova (1235-1311), of greater importance than Lully, indeed one of the three outstanding influences at Montpellier, studied Arabian chemistry, translated Avicenna's cardiac section of the Canon, Avenzoar's (Ibn Zuhr's) version on the diet and wrote other valuable books. His principal views on diseases were invariably drawn from Arabic authors.

Another powerful influence was that of Henri de Mondeville, a surgeon of the first rank, who wrote a work of great merit called "Anatomy and Surgery." He quotes from the Arabs extensively in this work.

But the brightest light in the history of the School of Montpellier, as well as of his time, was Guy de Chauliac. His "Grande Chirurgie" was of influence in medical circles as late as the seventeenth century and was a textbook in the universities of Europe up to the sixteenth. It was looked upon as one of the important manuals of that era. In this tremendous work de Chauliac showed the influence of the Arabs.

Osler states: "He, too, was dominated by the surgery of the Arabs and on nearly every page one reads of the sages, Avicenna, Albucasis or Rhazes."¹¹

The glory of Montpellier extended to the beginning of the fifteenth century before it experienced a crushing setback. One of the chief causes for this was the Black Death which played havoc with the population, another was the Hundred Years' War.

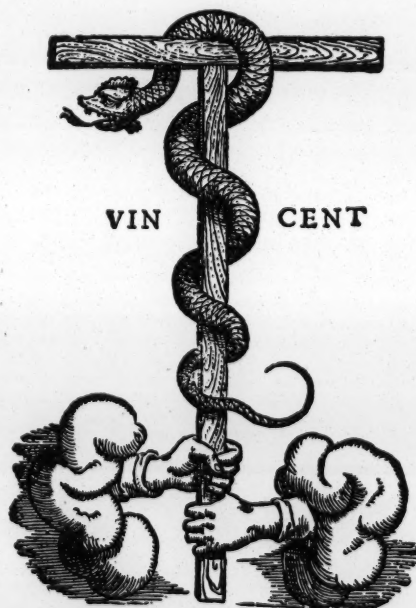
Culture and the arts and sciences were paralyzed.

But with the Renaissance came the recovery and the revival of Montpellier which became once more a factor in the medical fields of Europe and thus continues till the present day.

The author wishes to acknowledge his indebtedness to Dr. Harvey Cushing of Boston and Dr. Lawrence Reynolds of Detroit, for their valuable suggestions.

REFERENCES

1. BRIFFAULT, R. *Rational Evolution*. N. Y., 1930, p. 138.
2. SARTON, G. *Introduction to History of Science*. Balt., 1927, 1: 17.
3. McCURDY, E., *Roses of Paestum*. London, 1900. Reprint: MOSHER, T. B. Bibelot. Portland, 1904, p. 199.
4. BROWN, A. *Old Masterpieces in Surgery*. Omaha, 1928, p. 37.
5. HITTI, P. K. *An Arab-Syrian Gentleman, Usamah Ibn Munqidh*. N. Y., 1929, p. 162.
6. SUDHOFF, K. *Essays in the History of Medicine*. N. Y., 1926, p. 235.
7. MEYERHOFF, M. *Ten Treatises on the Eye Ascribed to Hunain ibn Ishaq (809-877 A.D.)*. Cairo, 1928, p. 34.
8. SUDHOFF, K. *Op. cit.*, p. 238.
9. SUDHOFF, K., *Op. cit.*, p. 243.
10. HIRSCHBERG, J. *Ueber das alteste arabishe Lehrbuch der Augerheil Kunde*. Wissenschaftler, 1903.
11. OSLER, SIR W. *The Evolution of Modern Medicine*. New Haven, 1923, p. 109.



ARABIAN MEDICINE AS REPRESENTED IN THE MEMOIRS OF USĀMAH IBN-MUNQIDH

By DANA C. MUNRO AND CUSHMAN D. HAAGENSEN, M.D.

PRINCETON, N. J.

NEW YORK CITY

ACTUAL case histories giving details of treatment are perhaps the most accurate index of the status of medical practice. The comprehensive studies on Arabian medicine by Leclerc,¹ Browne,² and Campbell,³ while furnishing admirable surveys of the subject as a whole, quote but few accounts of individual cases. The Canon of Avicenna, the first book of which has recently been translated by Gruner,⁴ was perhaps the most widely popularized Arabian medical treatise, and may be taken as representative of Arabian medical writings. It is largely concerned with classifying signs and symptoms on the basis of the humoral philosophy. Detailed directions for bleeding, cupping and purging, and as to the use of the elaborate formularies are given, but illustrative case reports describing how the Arab physician met the exigencies of daily practice are not presented.

It is therefore of interest to seek out details of actual medical practice from non-medical sources such as memoirs. Fortunately for this purpose, medical knowledge, such as it was, was more generally shared by the upper classes in Arabian civilization than is the case in our modern times. In the days of the Caliphate of Baghdād, for instance, during the Golden Age of Arabian culture when that city was the center of learning where the literary treasures of Greek and Latin civilization were collected and translated into Arabic, educated persons were interested in medicine.

To judge of this interest we need only turn to the story of the slave girl Tawaddud in the Arabian Nights.⁵ Tawaddud was sold to the Caliph Harun al-Rashid for a large sum by her bankrupt master. The sale was conditional upon the girl's ability to answer any questions put to her by the most learned authorities in each branch of knowledge. Her examination in medicine lasted six nights and included anatomy, physiology, signs and symptoms, hygiene, and dietetics. The slave girl's knowledge of these subjects was apparently quite equal to that of the most learned physicians of the time.⁶

Perhaps the most famous memoirs of Arabian life during the Middle Ages are those of Usāmah ibn-Munqidh. Usāmah was born on July 4, 1095, in the castle of Shayzar in northern Syria. In the hands of his family this castle was one of the strategic strongholds against the invading crusaders. Devoting his life to war and to literature Usāmah lived to the ripe age of ninety-three, dying in Damascus on November 16, 1188. His education of ten years of formal training under private tutors, and a lifetime of intercourse with the most learned of his day, probably endowed Usāmah with as much medical knowledge as a layman of his time could have.

A more accurate translation of these Memoirs than was hitherto available has recently been made by Hitti.⁷ Their importance is tersely summarized by the translator in his introduction:

Usāmah was a warrior, a hunter, a gentleman, a poet and a man of letters. His life was an epitome of Arab civilization as it flourished during the early crusading period on Syrian soil. He was a flower of the Arab-Syrian chivalry which found its full bloom later in his patron and friend, the great Saladin. The Memoirs of Usāmah are a unique piece of Arabic literature. They open before our eyes a new vista into medieval times and constitute an invaluable contribution to our knowledge of Arabic culture, in itself as well as in its relation to Western thought and practice.

Since Usāmah's life was largely spent in the hunting field and in making war, his practical interest in medicine, and particularly in regard to the care of wounds, was great. Dictating the Memoirs in his ninetieth year he says (page 194): "How many sword cuts and lance thrusts have I received! How many wounds with darts and arbalest stones have been inflicted on me!" Usāmah lived in close contact with nature almost all his life and was ever curious as to her workings. His powers of accurate observation and careful description were exceptional. Fortunately for us these circumstances resulted in the inclusion of many accounts of illnesses and wounds in the Memoirs. We have thus available a series of case histories which should be of value in forming an estimate of the status of Arabian medical practice during the twelfth century.

In his admirable review of Arabian medicine, Browne⁸ recognized the value of Usāmah's Memoirs as a source for medical data, and quoted briefly from them. He had only Derenbourg's⁹ translation, however, which is not as accurate as that made by Hitti. It would seem worth while to quote at length Usāmah's medical

reminiscences as they appear in this new translation.

The Arabs of this time had at least an elementary knowledge of the appearance and function of nerves, as evidenced by Usāmah's father's account of a wound which he received (page 80):

I felt something biting my forearm. I took it to be caused by the heat from the vambrace of the byrnie.¹⁰ But my lance fell from my hand. I turned my arm to see, and all of a sudden realized that I had been pierced with a lance in my forearm, which weakened because of the cutting off of some of the nerves.

Usāmah goes on to say:

I was present with him . . . when Zayd the surgeon was dressing his wound . . . My father said, "O Zayd, extract this pebble from the wound." . . . Annoyed by his insistence the surgeon said, "Where is the pebble? This is the end of a nerve that has been cut off." In reality it was white as though it were one of the pebbles of the Euphrates.

Anatomy was, of course, the subject in which Arabian medicine was weakest. The Mohammedan religion teaches that the soul suffers when the body is incised either before or after death. Vivisection and autopsy are therefore prohibited. In Usāmah's time the Arabs knew no more about anatomy than they had learned from their translations of Galen. Twaddud, for instance, was able to enumerate the bones with approximate accuracy, but she knew practically nothing about the vessels and nerves. Usāmah was apparently quite as ignorant.

It is of interest to note that this ignorance of anatomy among Mohammedans has persisted up to within modern times. When the French went into Algeria in 1830, according to

Dr. Bertherand,¹¹ who later organized medical service among the natives, the Arabs were found to have only the most primitive knowledge of anatomy.

In therapy Usāmah leaned heavily on bleeding, as was the general practice among Arabian physicians. He tells how he saved the life of a wounded soldier with this procedure (page 59):

On that battle day, one of our Syrian comrades received a number of wounds. His brother came to me and said, "My brother is in desperate plight. He has received so many wounds from swords and other weapons, and he is now unconscious and does not come to his senses." "Go back," said I, "and bleed him." He replied, "He has already lost twenty rotls of blood." "Go back," I repeated, "and bleed him. I have had more experience with wounds than thou. There is no other remedy for him but bloodletting." He went away, absented himself for two hours and then returned with his face showing signs of gratification, and said, "I have bled him and he regained his senses, sat up, ate and drank. All ill has departed from him." "Praise be to Allah!" said I. "Had I not tried this on my own self a number of times, I would not have prescribed it to thee."

Bleeding was apparently the usual treatment for any illness, as illustrated by the following passage (page 175):

There used to visit us in Shayzar a man . . . who was meritorious and learned. . . . In case he got sick, the physician would prescribe bloodletting, and every time the bloodletter came, Sālim's color would change and he would shiver; and when the bloodletter applied the knife, he would faint and remain unconscious until the cut was bandaged, upon which he would return to consciousness.

The wound surgery described by Usāmah was of the simplest sort. It

was apparently not ordinarily the practice to suture wounds. This is shown by Usāmah's description of the treatment of a wound of the forehead which was certainly well adapted for suturing had this been the routine custom (page 64):

So the two had an encounter with the lances, and another encounter with the swords, in the course of which abu-Musaykah struck Mālik, split his head and inverted his eyelids. . . . Mālik then retreated to his tent, hugging the neck of his horse. A group of his relatives and friends gathered around him crying. So he said to one of them, "Put thy hand in my mouth." The man put his finger inside of Mālik's mouth and the latter bit it. The man twisted with pain. "Well," said Mālik, "nothing wrong with your man. For it is said that as long as the teeth are safe the head is safe. Stuff it (referring to the wound) with fine flour and bandage it with a turban." . . . Mālik returned to his camp where he remained forty days unable to move. After that he recovered and was healed from his wound.

It would appear from the following accounts, however, that if the wound was of such a nature that it was impossible to maintain coaptation without sutures they were used (page 83):

My uncle . . . received on that day a number of wounds, one of which was inflicted by a lance in the lower eyelid near the inner corner of the eye. The lance pierced through the eyelid to the outer corner. The whole eyelid fell down and remained suspended with its skin at the outer corner of the eye. . . . The surgeon sewed the eye and treated it, and it returned to its former position; so much so that the stabbed eye could not be distinguished from the other one.

And (page 106):

The Frank immediately struck him with the sword on the side of his face and

cut the
nose,
side of
Numa
compa
and br
night.
condit
and h
healed
dition
was lo

Th
of ex
193)

. . .
of wh
the m
the f
came
had
a Fra
as fa
face
chest
open
all th
In t
The
The
man
ous
deat

S
plan
par
udi
Ma
hib
am
res
we
Th
tra
sur
an
inf
of

cut through his eyebrow, eyelid, cheek, nose, and upper lip, making the whole side of his face hang down on his chest. Numayr went out of the cavern to his companions, who bandaged his wound and brought him back during a cold rainy night. He arrived in Shayzar in that condition. There his face was stitched and his cut was treated until he was healed and returned to his former condition, with the exception of his eye which was lost for good.

The following is another instance of extensive wound suturing (page 193):

... I saw three persons advancing, two of whom looked like human beings, but the middle man had a face different from the faces of human beings. When they came near us, behold! the middle man had had his face struck by the sword of a Frank in the middle of his nose and cut as far back as the ears. One half of his face was so loose that it hung over his chest. Between the two halves was an opening almost the width of a span. With all that, he was walking between two men. In this condition he entered Shayzar. The surgeon sewed his face and treated it. The sides of the cut stuck together, the man recovered and returned to his previous condition and finally died a natural death on his own bed.

Surgery was never on as high a plane as medicine among the Arabs, partly because of the religious prejudice against mutilation of the body. Male physicians, moreover, were prohibited by religious custom from examining the female genitalia, with the result that gynecology and obstetrics were entirely left to female nurses. The neglect of surgery may also be traced to the fact that Galen regarded surgery as only a mode of treatment and the surgeon as a servant and an inferior. The Arabian commentators of Galen readily accepted this idea

which fitted in so well with their religious convictions. Rhazes (860-932) complained that surgery was left entirely to slaves. Avicenna (980-1036) regarded surgery as an inferior and separate branch of medicine.

Usamah indicates that medicine and surgery were separate fields but gives us no clue as to their comparative dignity (page 134):

I saw the son of one of the Turkoman amirs . . . when an arrow hit him and did not penetrate as deep as a grain of barley in his skin. He immediately dropped down, his muscles relaxed, his power of speech ceased, and he became unconscious, although he was a man as big as a lion; no bulkier man could be. They brought him the physician and the surgeon. The physician said, "No fear for him now, but if he is wounded again he dies." So the man was calmed, and began to ride his horse and conduct himself as he used to before. A short time later, however, he received another arrow wound which was slighter and less harmful even than the former one; and he died.

From another passage we learn, however, that bone-setting, at least, was left to artisans (page 144):

Another mangonel stone struck one of our men on his lower leg and broke it. They carried him to the presence of my uncle, who was then sitting in the hallway of the castle and who said, "Fetch the bone-setter." Now there was in Shayzar an artisan named Yahya who was an expert in bonesetting. He came and sat down in a recess outside the castle gate, and began to set the bones of the leg. A stone hit the head of the man with the broken leg and crushed it. The bonesetter reentered the hallway, upon which my uncle said to him, "How quickly thou hast set his bone!" "O my lord" he replied "another stone hit him and saved him the trouble of undergoing the operation of setting."

Usāmah observed several interesting cases of ascites in which withdrawal of the fluid gave relief. In the first the paracentesis was apparently the result of an attempted suicide (page 176):

Ahmad brought that man before me and I questioned him about his condition and the manner in which he treated himself. His answer was this: "I am a pauper and live all by myself. I was afflicted with dropsy and became so old that I could no more move about and became tired of life. So I took a razor and struck it along my navel across my abdomen and cut it open. About two cooking vessels (meaning two measures) of water came out. The water continued to ooze out until my abdomen shrunk. I then sewed the cut and treated it until it was healed. The disease has thus gone away." Saying this he showed me the place of the cut in his abdomen, which was more than a span in length.

In the second case the paracentesis was accidental (page 88):

I went there accompanied by a groom, named Ghunaym, who was afflicted with dropsy and whose neck had become thin and whose abdomen had become inflated. . . . Among us was a young Turk who drank to the point of intoxication, went out to the stable, drew his dagger and rushed on the servants. They all took to flight and rushed out with the exception of Ghunaym, who, because of his weak condition and disease, had thrown the saddle under his head and lain down. . . . Then the drunken man stabbed him with the dagger under his navel and cut in his abdomen a wound about four inches deep, which made him fall on the spot. . . . The surgeon made frequent visits to my servant, until he was better, could walk and do his work. But the wound would not heal. For two months it continued to excrete something like scabs and yellow water, at the end of which time the cut closed up, the abdomen of

the man resumed its normal condition and he returned to perfect health.

From Usāmah's comment on these cases it would appear that the therapeutic value of paracentesis in ascites was indeed recognized by some physicians at this early date, although Usāmah himself apparently saw no value in the procedure, preferring, as always, to attribute the outcome of disease to supernatural powers. In regard to the first patient he concluded (page 177):

There can be no doubt that this man had still a livelihood on this earth to which he was entitled. Under other circumstances, I have seen people with dropsy whose abdomens physicians cut open and from which water came out just as it did in the case of this man who cut himself, but who nevertheless lost their lives on account of the operation. Fate is an impregnable fortress.

Ascites was also apparently treated by bloodletting, for in another place (page 90) Usāmah states: "I have seen the case of one afflicted with dropsy who was treated by bloodletting in his abdomen and who died. . . ."

In the section of his *Memoirs* devoted to an appreciation of the Frankish character some illuminating comparisons of Frankish with Arabian medicine are to be found. Usāmah in general found the crusaders to be brave fellows, but intolerant, rough, and stupid. Their physicians were apparently none the less so. Usāmah writes (page 162):

A case illustrating their curious medicine is the following: The lord of al-Munaytirah wrote to my uncle asking him to dispatch a physician to treat certain sick persons among his people.

My uncle sent him a Christian physician named Thābit. Thābit was absent but ten days when he returned. So we said to him, "How quickly hast thou healed thy patients!" He said: "They brought before me a knight in whose leg an abscess had grown; and a woman afflicted with imbecility. To the knight I applied a small poultice until the abscess opened and became well; and the woman I put on diet¹² and made her humor wet. Then a Frankish physician came to them and said, 'This man knows nothing about treating them.' He then said to the knight, 'Which wouldst thou prefer, living with one leg or dying with two?' The latter replied, 'Living with one leg.' The physician said, 'Bring me a strong knight and a sharp axe.' The knight came with the axe. And I was standing by. Then the physician laid the leg of the patient on a block of wood and bade the knight strike his leg with the axe and chop it off at one blow. Accordingly he struck it—while I was looking on—one blow, but the leg was not severed. He dealt another blow, upon which the marrow of the leg flowed out and the patient died on the spot. He then examined the woman and said, 'This is a woman in whose head there is a devil which has possessed her. Shave off her hair.' Accordingly they shaved it off and the woman began once more to eat their ordinary diet—garlic and mustard. Her imbecility took a turn for the worse. The physician then said, 'The devil has penetrated through her head.' He therefore took a razor, made a deep cruciform incision on it, peeled off the skin at the middle of the incision until the bone of the skull was exposed and rubbed it with salt. The woman also expired instantly. Thereupon I asked them whether my services were needed any longer, and when they replied in the negative I returned home, having learned of their medicine what I knew not before."

Usāmah shows his fairness by relating a case in which Frankish methods were superior (page 162):

I have, however, witnessed a case of their medicine which was quite different from that. The king of the Franks had for a treasurer a knight named Bernard . . . who was one of the most accursed and wicked among the Franks. A horse kicked him in the leg, which was subsequently infected and which opened in fourteen different places. Every time one of these cuts would close in one place, another would open in another place. All this happened while I was praying for his perdition. Then came to him a Frankish physician and removed from the leg all the ointments which were on it and began to wash it with very strong vinegar. By this treatment all the cuts were healed and the man became well again.

Usāmah then continues by relating several other instances of curious medication by the Franks (page 163):

In Shayzar we had an artisan named abu-al-Fath, who had a boy whose neck was afflicted with scrofula. Every time a part of it would close, another part would open. This man happened to go to Antioch on business of his, accompanied by his son. A Frank noticed the boy and asked his father about him. Abu-al-Fath replied, "This is my son." The Frank said to him, "Wilt thou swear by thy religion that if I prescribe to thee a medicine which will cure thy boy, thou wilt charge nobody fees for prescribing it thyself? In that case, I shall prescribe to thee a medicine which will cure the boy." The man took the oath and the Frank said: "Take uncrushed leaves of glasswort, burn them, then soak the ashes in olive oil and sharp vinegar. Treat the scrofula with them until the spot on which it is growing is eaten up. Then take burnt lead, soak it in ghee butter and treat him with it. That will cure him." The father treated the boy accordingly, and the boy was cured. The sores closed and the boy returned to his normal condition of health. I have myself treated with this medicine many who were afflicted with such disease, and the treat-

ment was successful in removing the cause of the complaint.

Another case (page 166):

A curious case relating to their medicine is the following, which was related to me by William of Bures . . . who was one of the principal chiefs among the Franks. . . . "We had in our country a highly esteemed knight who was taken ill and was on the point of death. We thereupon came to one of our great priests and said to him, 'Come with us and examine so and so, the knight.' 'I will,' he replied, and walked along with us while we were assured in ourselves that if he would only lay his hand on him the patient would recover. When the priest saw the patient, he said, 'Bring me some wax.' We fetched him a little wax, which he softened and shaped like the knuckles of fingers, and he stuck one in each nostril. The knight died on the spot. We said to him, 'He is dead.' 'Yes,' he replied, 'he was suffering great pain, so I closed up his nose that he might die and get relief.'"

Usāmah was undoubtedly right in regarding Frankish medicine as inferior to the Arabian.

Despite Usāmah's superior common sense as regards many medical matters, whenever he encountered a cure which he could not understand he regarded it as a miracle, for he was at heart a good Mohammedan. He would say (page 213): "How mysterious are the deeds of the Almighty, who afflicts with disease and gives the cure!" He devotes an entire chapter to accounts of such miraculous cures which he had seen or heard of. A few of these are worth quoting, for they show something of the Arab physician's methods of treatment.

Hernia cured by eating ravens [page 213]. We had with us at Shayzar two brothers. . . . In their capacity as traders they used to travel to Baghdād and other

places. Muzaffar was afflicted with a dreadful scrotal hernia, which made him feel always tired. As he was once in a caravan crossing al-Samāwah to Baghdād, the caravan encamped with a clan of Arabs, who prepared and cooked birds for them as guests. After supper they went to sleep. Muzaffar awoke in the nighttime, roused his comrade who was sleeping by his side, and said to him. . . . "That hernia is all gone and has left no trace." His neighbor examined it and found that Muzaffar had returned to normal health like any other man. When they got up in the morning they asked the Arabs who were their hosts regarding the food they had given them for supper, to which the Arabs replied, "Ye encamped in our quarters at a time when our animals were in a distant pasturage. So we went out, seized young ravens and cooked them for you!" On their arrival in Baghdād they went to the hospital and related their story to the director in charge. The director sent and procured young ravens and fed those suffering with the same disease on them, but the ravens did the patients no good and had no effect whatsoever on them. So the director said, "The father of the bird which Muzaffar ate must have fed that bird on vipers. That is why it did him good." . . .

Dropsy cured by vipers in vinegar [page 214]. A similar case is that of one who came to Yūḥanna ibn-Butlān,¹³ the physician celebrated for his knowledge, science and leadership in the art of medicine, when the latter was in his shop in Aleppo, and complained to him about a disease which he had. The physician saw that he was suffering from chronic dropsy, his abdomen was inflated, his neck had become thin and his whole appearance changed. The physician said, "My boy, by Allah, there is nothing that I can do to help thee; and medicine can no more be of any avail to thee." The man departed. After a while this same man passed by the physician's shop entirely cured from his disease, with his

abdomen drawn back to its original position, and his condition satisfactory. Ibn-Buṭlān called him and said. . . .

"With what didst thou then treat thyself that thy ailment has disappeared?" The man replied, "By Allah, I treated myself with nothing. I am a pauper, possessing nothing whatsoever. I have nobody to take care of me except my mother, an aged and feeble woman. She had in two small casks some vinegar on which she fed me every day with bread." Ibn-Buṭlān asked him, "Is there anything left of that vinegar?" "Yes," he replied. The physician said, "Come with me and show me the cask in which the vinegar is kept." So he walked ahead of him to his house and showed him the cask of vinegar. On emptying the vinegar that was in it, ibn-Buṭlān discovered at the bottom of the cask two vipers which had become rotten. Then he said to the man, "My son, no one could have treated thee with vinegar having two vipers until thou wert healed but Allah-mighty and majestic is he!"

Usāmah's admiration for ibn-Buṭlān was great. The following two cases do indeed show that this physician was exceptionally wise (page 215):

There came to him in his shop in Aleppo a man who had lost the faculty of speech and whose words could hardly be understood when he tried to utter them. Ibn-Buṭlān asked him, "What is thy profession?" The man replied, "I am a sifter." The physician said, "Bring me half a rotl of sharp vinegar." The man did so. The physician said to him, "Drink it." So he drank it and took his seat for an instant, after which he felt nauseated and began to vomit clay in abundance, mixed with the vinegar which he had drunk. Consequently his throat became open again and his speech normal. Then, turning to his son and students, ibn-Buṭlān said to them, "Treat not with this medicine anybody, for ye may kill him. In this case a great quantity of

dust from sifting had been deposited in the oesophagus and nothing could clean it out except the vinegar."

Ibn-Buṭlān was for some time attached to the service of my great-grandfather . . . There appeared on my grandfather . . . who was then still a young boy, some white spots which disturbed his father for fear that the malady might be leprosy. So he summoned ibn-Buṭlān and said to him, "See what has appeared on the body of 'Ali." The physician looked it over and said, "I demand five hundred dīnārs to treat his malady and cause it to disappear." My grandfather said to him, "If thou hadst treated 'Ali, I would not have been satisfied with five hundred dīnārs for thee." Seeing that my grandfather was angry, ibn-Buṭlān said: "I am thy servant and thy slave, living on thy benevolence. I did not say what I said except jokingly. As for those things on 'Ali, they are nothing but skin eruptions caused by youth. As soon as he is fully adolescent, they will disappear. Worry not, therefore, about it, and listen not to someone else who might say that he would cure him and thereby make money from thee. All this will disappear with the maturity of the young man." And things turned out just as he had said.

An impression can be gained from the Memoirs as to which diseases were the most prevalent in Usāmah's time. In describing a group of Arab prisoners which he had captured, he writes (page 36):

As I brought the prisoners together, I found them afflicted with a great affliction: their dry skins had stuck to their bones.¹⁴ "What are ye?" asked I. "We belong to the banu-Ubayy tribe," they replied. Now the banu-Ubayy tribe are a clan of the Arab tribe called Tayy. They eat nothing but dead animals, and yet they say, "We are the best of all Arabs. None of us suffers from elephantiasis, leprosy, any chronic disease or blindness." . . . "Why," asked I, "did ye

not enter Damascus?" "We were afraid of the pest," they replied.

The prevalence of ophthalmitis is indicated by Usāmah's account of the unusual result of a wound in the forehead (page 87):

The blow cut through the hood and wounded Jum'ah's forehead, from which blood flowed until it was all drained, leaving his forehead open like the mouth of a fish. . . . Now, Jum'ah had most of the time a black kerchief round his face, on account of an inflammation (i.e. ophthalmia) and enlarged veins, with which his eyes had for a long time been afflicted. When he received that wound from which gushed forth so much blood, the disease from which he was suffering in his eyes vanished. He no more had ophthalmia nor felt pain.

A case which was probably one of *madura foot* (*maduramycosis*), or of tropical ulcer, the so-called "Baghdad boil" or "Aleppo button" (cutaneous leishmaniasis), diseases common in the Orient, is described in the following passage (page 175):

Among our men . . . was a black man . . . in whose foot appeared a pustule. The pustule turned malignant. His toes fell off, and the whole leg began to rot. The surgeon said to him, "There is nothing to do for thy leg but amputation. Otherwise thou art lost." The man procured a saw and sawed his leg until the flow of blood made him faint. On coming back to consciousness he would start sawing it again. This continued until he amputated it at the middle of the leg. After some treatment it was cured.

It is of interest to note that Bertherand,¹⁵ writing of medicine among the Arabs in 1855, seven hundred years after Usāmah, reported conditions

very similar to those which our diarist describes. Elephantiasis (*filariasis*) and leprosy were still the common endemic diseases. Syphilis, which was probably infrequent in Usāmah's time,¹⁶ was now ubiquitous. Bertherand stated that the Arabs "lived and died with it." Great epidemics of bubonic plague and smallpox still swept the country. To these scourges, however, *cholera asiatica* had been added. It first invaded Arabia and Syria from India in 1821.¹⁷ The hot winds of the desert and the fierce glare of the sun still made ophthalmitis very frequent. And the Christian physicians still wondered about the pathological nature of "madura foot" and "Aleppo button." Surgery was in an even more degraded state than it had been in Usāmah's time, for it was now largely left to the barbers. General medical therapy had changed but little, bleeding and cupping being the general therapy for most illnesses.

Great changes have of course taken place during the eighty years since Bertherand wrote. With modern scientific methods European investigators have worked out the cause and treatment for many of the hitherto obscure oriental diseases, and have done much to reform medical practice in the east.

We can then leave our diarist with the thought that his memoirs have been read with pleasure and profit eight hundred years after they were written, and that his destiny has been quite other than that which he envisaged in his old age, as he wrote among the concluding lines of his autobiography:

Destiny seems to have forgotten me, so that now I am like
An exhausted camel left by the caravan
in the desert.

REFERENCES

1. LECLERC, L. *Histoire de la Médecine Arabe*. Paris, Leroux, 1876.
2. BROWNE, E. G. *Arabian Medicine*. Cambridge, Univ. Press, 1921.
3. CAMPBELL, D. *Arabian Medicine*. London, Kegan Paul, 1926.
4. GRUNER, O. C. *The Canon of Avicenna*. London, Luzac, 1930.
5. BURTON, R. F. *A Plain and Literal Translation of the Arabian Nights' Entertainments*, now entitled *The Book of the Thousand Nights and a Night*. Medina Ed., Priv. Print., 5: 218-227.
6. The idea of the tale may have been suggested by Martianus Capella's well-known text, "*De nuptiis philologiae et Mercurii*," but the fact of its inclusion in the *Arabian Nights* indicates the interest in medicine.
7. HITT, P. K. *An Arab-Syrian Gentleman and Warrior in the Period of the Crusades*. *Memoirs of Usamah ibn-Munqidh*. N. Y., Columbia Univ. Press, 1929.
8. BROWNE, *Op. cit.*, pp. 69-72.
9. DERENBOURG, H. *Ousama ibn-Mouunkidh*. Paris, Leroux, 1889, pp. 487-491.
10. The forearm piece in a coat-of-mail.
11. BERTHERAND, E. L. *Médecine et Hygiène des Arabes*. Paris, Germer Ballière, 1855, p. 115.
12. An aphorism of the prophet: "Abstention from harmful food is the principle of all healing." LEVY, R., *A Baghdad Chronicle*, Cambridge, Univ. Press, 1929, p. 250.
13. This *ibn-Butlān* is referred to by Leclerc (*op. cit.* p. 489) as a well known Christian physician of Bagdād. He spent his life in Syria, Egypt, Constantinople (he was there in 1054 when the plague caused great devastation) and at Antioch, where he was director of a hospital. Among the numerous works with which he is credited his treatise on hygiene, entitled "*Takouim essahha*," is the best known.
14. A figurative way of saying "very lean and thin," corresponding to English "skin and bone"—Hitti.
15. BERTHERAND, *Op. cit.*, p. 390.
16. BURTON. *Op. cit.*, 10: 88, states that syphilis is ignored by *The Nights*. Although the different portions of *The Nights* were apparently written at widely separated dates, some of the tales certainly post-dated Usamah's generation.
17. ROGERS, L. *Cholera and its Treatment*. London, Frowde, 1911, p. 6.



GEORGE E. GOODFELLOW,
FRONTIER SURGEON AND SOLDIER*

[1855-1910]

By MILEY B. WESSON, M.D.

SAN FRANCISCO, CALIF.

DR. George Emery Goodfellow, pioneer prostatectomist and commonly known as the man who negotiated the surrender of Santiago de Cuba, was born in Downieville, Sierra County, California, December 23, 1855.

The father, Milton J. Goodfellow, came to San Francisco, overland, in 1849. He was a mining engineer, a member of the American Institute of Mining and Metallurgical Engineers, and had studied both medicine and dentistry and though he had never graduated and never officially practiced, he was commonly called "doctor," and was very handy around a mine that had no company surgeon. In 1851, he returned to Pennsylvania and married Ann Amanda Baskin, the daughter of a physician. The father, Dr. John Baskin, would not allow her to come to California at that time, but the following year she came around Cape Horn and joined her husband, who was working on the "Mother Lode." Three years later a son was born.

George E. Goodfellow lived in Downieville until 1865. His father then moved to Austin, Nevada. In 1868, George was sent to live with an aunt at Meadville, Pennsylvania, and attend school. In 1870, the family moved to Treasure City, Nevada, and the boy was brought home and entered the California Military Academy, conducted by the Rev. David McClure, in Oakland. In 1871, he

matriculated at the University of California in the Freshman class, College of Engineering, and remained one year. According to the records, he pursued courses in mathematics, French, English, history and ancient languages, and appeared to be of average ability.

He had a leaning toward military life and it was planned to send him to West Point, but he refused the tendered appointment because of the negroes in attendance and instead was appointed, from Nevada, a midshipman at the United States Naval Academy. He entered Annapolis, June 12, 1872, and shortly thereafter from South Carolina the first negro cadet was appointed. Rear Admiral Robley D. Evans says, "In our efforts to protect the colored boy we ran into the error of paying him too much attention and he gave himself undue importance . . . the boy was really unbearable." The negro made the mistake of deliberately bumping into Goodfellow as he passed him in an upper hall, near the top of a double flight of stairs, and the negro was picked up a few moments later unconscious at the foot of the stairs. Dr. Goodfellow was at that time the champion boxer of the Academy. The incident became public and caused a great commotion among the reconstructionists. A Court of Inquiry, presided over by the late Admiral Schley and the Superintendent of the U. S. Naval Academy, expelled

*Read at the annual Historical Meeting of the San Francisco County Medical Society, February, 7, 1933.

him December 12, 1872, "because of the hazing of Midshipman Conyers, colored." President Grant told Goodfellow's cousin, John Baskin, Chief Justice of the Supreme Court of Utah, that it was necessary for political reasons to go through with the formality of punishment, but that as soon as the agitation had subsided he would reinstate him. While waiting Goodfellow went back to Meadville, Pennsylvania, and began to read medicine with his cousin. President Grant went out of office forgetting his promise, and the negro boy was dismissed a few months later because of an altercation with his roommate—a white ex-bootblack from New York City.

Goodfellow graduated in medicine from the University of Wooster, Cleveland, Ohio, February 24, 1876. He then married Katherine Colt of Meadville, Pennsylvania, and came to Oakland, California, in November, 1876. Although he began to practice at once, he was not licensed until August 21, 1879. Dissatisfied with his progress in building up a practice, when his father, who was superintendent of a mine at Prescott, Arizona, suggested that he come there as the company doctor, he accepted the offer. He was an acting assistant surgeon, United States Army, at Whipple Barracks, near Prescott, from October 1 to October 20, 1877, "when the agreement was annulled." He again became a contract surgeon on October 25, 1879, and was stationed at Fort Lowell, near Tucson, until September 15, 1880, when he resigned to go into private practice at Tombstone, a very lively mining camp which shortly had a population of 15,000. As would be expected, there was a large group of highly cultured people and evening

clothes were routine after six o'clock. Dr. Goodfellow soon became the coroner, as well as the leading surgeon. He was a very astute scientist, judging from his medical publications of that period, and according to the novelists he was a picturesque character and appears to have been in on most of the famous killings. Being a very active man, he was necessarily interested in local politics and although a member of the "Tombstone rangers," he never allied himself with any faction. At that period Bishop Hall, of the Episcopal Church, reported, "Phoenix is a pleasing place, Tucson is an important town and Tombstone is the condensation of wickedness." Consequently, it is easy to understand why Dr. Goodfellow had a greater practice in bullet wounds of the abdomen than any other man in civil life in the country, and being a true scientist he became a pioneer in the development of abdominal surgery for gunshot wounds.

His paper on "The Impenetrability of Silk to Bullets" was based on the Chandler Ranch fight of March 25, 1882, where deputy sheriff Breckenridge used a shotgun loaded with buckshot. Billy Grounds had a silk handkerchief around his neck and the shot did not penetrate it but carried the silk on through the skin. When Morgan Earp was assassinated a bullet that struck him in the small of the back shattered his spine, and passing through his body lodged in the thigh of George Berry, making however hardly an abrasion, and yet the latter was killed instantly. Goodfellow's report was that "technically he died of shock but practically he was scared to death."

The lynching of John Heath on Toughnut Street, 8:03 A.M., February

22, 1884, resulted in a famous coroner's verdict. It has been widely referred to as an uplifting ceremony,



FIG. 1. GEORGE E. GOODFELLOW. HIS CLOTHES WERE ALWAYS TAILORED IN A SEMI-MILITARY PATTERN.

the deceased dying of respiratory restriction. The jury was confronted with a delicate problem. The usual verdict of "death at the hands of parties unknown" was impracticable. All the lynchers were known, for immediately before Heath was strung up to a telephone pole Ben Williams, the superintendent of the Copper Queen Mine, accompanied by Dr. Goodfellow, was seen to go down the alley toward the jail along with about a hundred Bisbee miners. However, the jury had no intention of naming the parties at whose hands death had occurred; Tombstone heartily approved the hanging bee. Dr. George Goodfellow, as coroner, in his testimony hinted at a way out of the dilemma. He declared death had been caused by emphysema and although the jurors had not the slightest idea what emphysema meant, they caught

at the learned word as drowning men at a straw. Dr. Goodfellow explained that emphysema was a swelling caused by air in the cellular tissues and was sometimes due to strangulation and sometimes to the effects of high altitude (failure to keep the feet on the ground). What more could any honest jury want? The verdict read, "We, the jury of inquest impanelled and sworn by the coroner of Cochise County, after viewing the body and hearing the testimony, find that the name of the deceased was John Heath, 32 years old, a native of Texas, and that he came to his death from emphysema of the lungs, which might have been, and probably was, caused by strangulation, self-inflicted or otherwise, as in accordance with the medical evidence."

His report on McIntire, who had been badly shot up, is widely quoted by the novelists and he is supposed to have translated medical terminology into the vernacular of the camp, and instead of doing an autopsy to have "performed assessment work," and found the body to be "rich in lead but too badly punctured to hold whiskey."

He was a pioneer in plastic surgery. George W. Parsons, of Los Angeles, writes that during the big fire in Tombstone, June 1881, he was knocked senseless by a dislodged beam and

... a large splinter had entered just under the skin glancing upward and just missing the eye, face quite flattened and nose all over it. Dr. Goodfellow made a plaster cast, cut away the deformity in the cast and then cut my nose loose from the bone and tacked it up in place so that the cast, with the aid of a wire run through my nose, held it in place. I eventually recovered emerging with a fine Roman nose, free from disfiguration.

He was a public-spirited citizen and when water was piped into town in 1882, whereas formerly it was hauled in barrels, he was the leader of the movement that resulted in the establishment of a public swimming pool.

In 1883, the Tombstone mine owners cut wages from \$4.00 to \$3.50 and a very bitter brutal strike followed. The population of the town decreased from 7000 to 2000 in six weeks. Although Dr. Goodfellow was officially classified as a mine executive, the miners watched after him as if he were one of their number.

In September, 1886, Geronimo (chief of the Chiricahua band of Apaches) escaped from the San Carlos reservation and after terrorizing the state for some time was captured in September by General Miles, in Skeleton Canyon, and sent to Florida. During this campaign Dr. Goodfellow was very active in the pursuit, as he was familiar with the country. At one time while he was leading a small party up a very narrow trail on foot, and other parties were coming in from various directions to surround the Apaches, Dr. Goodfellow noticed, as they were creeping along, a huge rattlesnake directly in front of him. There was no room to back up so reaching out he grabbed the snake and quickly threw it over the cliff. One of the men in the party was so startled that he yelled and the Apaches hearing him slipped away.

During this period the Apaches used to sneak up on a sentry, quietly drop an arrow into him and creep away without being heard. Dr. Goodfellow was very much interested in this and could not understand why a sentry ten feet away could not hear the "twang" of the bow strings. Later

he spoke to the old Chief in Spanish about it and Geronimo told him that he would bet him \$20.00 to \$5.00 that



FIG. 2. SILVER DOUBLE-HEADED EAGLE OF AUSTRIA THAT BELONGED TO EMPEROR MAXIMILIAN.

he could stand within ten feet of him and shoot two arrows and the doctor would not be able to tell him when he did it. A tree was selected for a target and Dr. Goodfellow stood beside him and shut his eyes, as directed. When he opened them three arrows were sticking in the tree and Geronimo went off \$20.00 richer to the Government prison.

On May 3, 1887, there was a severe earthquake at Bavispe, Sonora, Mexico, and Goodfellow took a relief party of the Geological Survey into the district a month later. They went into sections where the natives had never seen a white man nor a horse and wagon. None of the injured had received aid and those with broken legs were crawling about. As a result of his surgical work he was considered by them to be a Saint and was thereafter

called by them "El Santo Doctor." He was offered any of their number that he wished as slaves and each year

to run a locomotive and was officially "licensed," and in emergencies frequently drove to wrecks accompanied

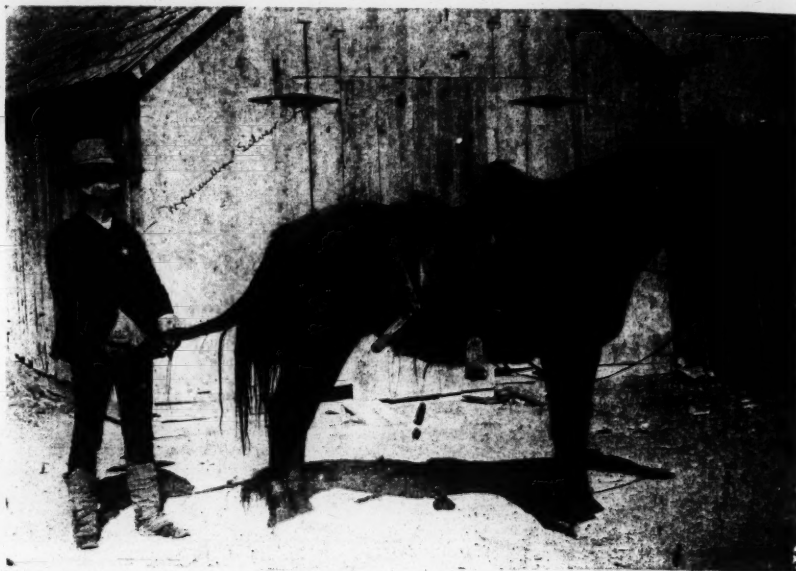


FIG. 3. DR. GOODFELLOW AND THE HORSE PRESENTED BY PRESIDENT DIAZ FOR SERVICES RENDERED FOLLOWING THE BAVISPE EARTHQUAKE IN 1887. THE MAXIMILIAN JEWEL IS IN HIS BUTTONHOLE.

the natives made a pilgrimage to his door, even after he moved to San Francisco. An abandoned horse, Kentucky bred, blooded and gaited, thought to have once belonged to the U. S. Army, and the silver double-headed eagle of Austria that was alleged to have been among the treasures of Emperor Maximilian and had been buried in the earth somewhere at the time of his attempted escape, were presented to Dr. Goodfellow with due formality and ceremony by a small body of Mexican soldiers sent from Mexico City by President Diaz, who became one of his close friends. (The Smithsonian Institute is unable to identify the jewel.)

Dr. Goodfellow never failed to answer a call of medical distress, and his obstetrical visits took him long distances in the country. He learned

only by the fireman. On September 24, 1891, Dr. John C. Handy, the first chancellor of the University of Arizona and the Southern Pacific surgeon at Tucson, was shot by Francis J. Heney (later famous as graft prosecutor in San Francisco) who had been retained by Mrs. Handy to procure a divorce for her. Dr. Goodfellow, accompanied by his young daughter, made a record trip that is still talked of by the old railroaders in Arizona. From Tombstone he went by livery team at full speed around the mountain turns to Fairbanks, where a wheezy locomotive awaited him on the narrow gauge track. He drove the engine with the throttle wide open over trestles and around sharp curves to Benson; there, on the main line, was an engine and a car for his comfort, but again he took the throttle and showed the railroad

men h
motive
the w
gaug
could
few h
arrival
official
cific su
that p
Angelo
served
under

He
losis a
advoc
When
patien
Los A
that t
in th
of co
establ

Ornd
nurse
ter, w
acted
with
begin
in hi
kitch
eratin
befor
sides
boilin

He
it wa
plast
a p
decto
reput
appe
that
in th
and,
worl
later

men how to get speed out of a locomotive, that was held to the rails by the weight of a caboose, on a broad gauge track. There was little that he could do for Dr. Handy, who died a few hours after Dr. Goodfellow's arrival. On October 3, 1891, he was officially appointed as Southern Pacific surgeon at Tuscon, and occupied that position until he moved to Los Angeles in 1896. From 1893 to 1896 he served as territorial health officer under Gov. L. C. Hughes.

He became interested in tuberculosis and was one of the pioneers in advocating the outdoor treatment. When his "cured" or partially healed patients found it necessary to go into Los Angeles on business, he insisted that they sleep on Mt. Wilson and not in the City. His primary interest, of course, was in surgery and he established a small hospital in the Orndorff Hotel staffed by an English nurse and his thirteen year old daughter, who for two and a half years had acted as his assistant, helping him with many prostatectomies. In the beginning much of his work was done in his office or in the homes, the kitchen being converted into an operating room by pulling the table before the window and hanging on all sides bed sheets freshly removed from boiling water.

He was a very versatile surgeon and it was not unusual for him to do a plastic operation, a cataract removal, a prostatectomy and an appendectomy in one morning. He is reputed to have performed the first appendectomy in Arizona and he says that he did a perineal prostatectomy in the week of September 29, 1891, and, if so, he was the first man in the world to take out the median and both lateral lobes. His prostatectomy op-

eration became widely known as "the operation" because of the travels of the mining magnates who had been his patients, and at the time of the Chicago World's Fair many Chicago men came to Arizona to be operated upon by him. Incidentally, they paid the same fees as do men in similar circumstances today.

About this time Dr. Goodfellow's curiosity was aroused by stories concerning the poisonous nature of the Gila monsters. He collected a dozen or more and after a careful study, which included teasing one of the animals so that it bit him and put him in bed for five days, decided that "the belief in the poisonous nature of the lizard was purely mythical and superstitious, the remnant of primitive man's antagonism to all creeping things." He then gave the collection to his daughter for pets. Many years later, when two cases of death due to acute alcoholism were attributed by the press to Gila monster bites, he published his observations in the *Scientific American*.

At the outbreak of the Spanish-American War, when his old friend, General William R. Shafter, called he gave up his practice and joined him. His official position has remained enigmatical to the army officers, but there was no more question as to his authority or power than there was concerning that of Colonel House in the late war. Before the Dodge Commission investigating the conduct of the War Department in the war with Spain, he was continually referred to by the regular army officers as "a civilian with no rank or authority." For example, Brig. Gen. C. F. Humphrey testified that "Dr. Goodfellow, a physician of California and a volunteer aide on General Shafter's staff,

was sent with a light draft steamer to various transports to gather up pan-niers. He was not sent by the Medical Department nor had he any special connection with it."

Dr. Goodfellow spoke Spanish fluently, whereas the records indicate that all of the official interpreters did not, and he is reported to have been directly responsible for the surrender of Santiago de Cuba by General Toral on July 17, 1898. Following the battle of San Juan and El Caney on July 3, he was blindfolded and under a flag of truce led into the Spanish camp, and he returned many times thereafter. The negotiations were carried on over a period of eight days and were not successful. Both sides were bluffing. The Americans were being held up facing gun-fire, storms, heat and impending epidemic (at the time of surrender half the command had malaria, yellow fever, dysentery or typhoid fever), and early on the morning of July 3d General Shafter cabled the Secretary of War that he was seriously considering withdrawing five miles in the rear, and that he must have reinforcements to take Santiago; and at the same time he demanded that the Spanish surrender within twenty-four hours. General Toral's reply was an emphatic refusal and an order for all foreigners to leave by 10 A.M. on July 4. On July 5, Dr. Goodfellow and Lt. Wm. Brooke carried the wounded Spanish prisoners into Santiago, where they were received by a Captain. Finally, on July 8, General Toral issued an ultimatum that unless he be allowed to evacuate the Division of Santiago and retreat to Holquim, with all men and property, firing would be resumed the following day at noon. On July 9, General Shafter

and his generals recommended to the War Department that the terms proposed by General Toral be accepted, but President McKinley peremptorily disapproved. Although the negotiations were not successful Goodfellow said that their personal relations were very affable, partially due to the brand of liquor served. On July 10, at 4 P.M., General Toral resumed fire. Goodfellow had become very fond of the Spanish Captain to whom he delivered the wounded prisoners on July 5. When the firing ceased on the morning of July 11 and Goodfellow went back into the Spanish lines one of the first bodies he encountered on the way was that of his friend. Dr. Goodfellow was not received kindly at this visit as General Toral was apparently little interested in a surrender but only in an honorable evacuation. Finally, General Shafter asked for a personal conference. This was held at 11 A.M. on July 14 (with his official interpreters) and the Americans retired thinking that Toral had agreed to a surrender, due to faulty interpretation, and so appointed commissioners. The Spanish refused to sign, and finally at 9:40 P.M. General Toral was brought back to straighten out the misunderstanding. He said he had not agreed to surrender and although he had the permission of General Blanco to do so, the matter must first be approved in Madrid. The following day he did agree to surrender. A Brigadier General who was with Shafter writes, "Someone talked General Toral into it. Who?" Dr. Goodfellow said that never had alcohol been used for a better or more therapeutic cause. The late Dr. Agramonte, the yellow fever authority, was present when Dr. Goodfellow returned from his successful mission.

His ser
in the
1900):
civilian
William
merito
militar
(At th
it is o
that o
have b
Dr.
cisco i
fornia
18, 19
local s
way. I
the An
cians,
Surgeo
On J
Oak L
the C
Septen
Club,
versity
charters
He wa
doctor
a dru
He sa
surgeo
was w
ing af
the h
having
plaster
fingers
of un
such a
having
fluent
Dr.
made
the fir
ately
admir

His services were officially recognized in the following citation (February 13, 1900): "July 1898 Dr. G. Goodfellow, civilian and volunteer aide to General William R. Shafter; for especially meritorious services, professional and military during the campaign in Cuba." (At that time citations were rare and it is only within the past few years that other members of Shafter's staff have been so honored.)

Dr. Goodfellow moved to San Francisco in 1900, and joined the California State Medical Society on April 18, 1901. For a year or two he was local surgeon for the Sante Fe Railway. In 1904, he became a member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons.

On June 6, 1885, he joined the Live Oak Lodge of Masons (in Oakland), the California Club (Los Angeles) September 4, 1896, the Bohemian Club, November 9, 1893, the University Club, April, 1901, and was a charter member of the Family Club. He was not a politician but was a good doctor and had the same contempt for a drunkard as for a prohibitionist. He said that the test of when a surgeon should leave alcohol alone was when he was unable "the morning after the night before" to bring the heads of two needles together, having several layers of adhesive plaster over the tips of his index fingers and thumbs. He was intolerant of uneducated people, claiming that such a state indicated stupidity, he having taught himself to read and speak fluently Spanish, German and French.

Dr. Goodfellow said, "In 1891 I made a pure perineal prostatectomy, the first so far as known to me deliberately devised and carried out." His admirers complain that he has never

been given proper recognition as the originator of perineal prostatectomy. This is due to the fact that although he says the operation was first performed during the week of September 29, 1891, it was not published until 1901. Unfortunately, his name did not appear in the *Index Medicus* during the time of his residency in Tucson, when he was surgeon for the Southern Pacific Railroad, although he was a regular contributor to medical journals both before and after that period. He went to Tucson to take care of Dr. Handy on September 24, 1891, and although he returned one day a week to Tombstone to care for his practice, and was given a formal banquet at the famous Can Can restaurant on October 20, 1891, the probability is that St. Mary's Hospital in Tucson was the scene of his first operation, but neither hospital records nor witnesses are available.

On December 3, 1896, Dr. Goodfellow was on the program in Los Angeles for a paper entitled "Prostatectomy by Perineal Incision." He went East to demonstrate the operation at various surgical centers and sent his assistant to read the paper. Dr. J. B. Hamilton writes, "When he gave me those scattered notes to be presented before the Southern California Medical Society he talked much about the ease of enucleating the prostate lobe with that long finger of his." Publication of the paper was refused, the members asserting that there had been an "infringement of the dignity of the society by having a paper presented by proxy." Goodfellow told the San Francisco County Medical Society, October 8, 1901, that the paper gave

... a resume of prostatic cases operated upon by me during the five years pre-

ceding the meeting. Owing to my absence in New York the paper was not published in the proceedings of the Society and the original is not now to be found. Urged, however, by my friend, Dr. George Chismore, of San Francisco, who has kindly supplied me with some cases upon which to demonstrate my method, I have concluded to publish the paper from notes retained at the time mentioned, adding subsequent cases.

Dr. Goodfellow was a guest speaker before the California Academy of Medicine in April, 1902, and read a paper on Perineal Prostatectomy. In 1904, he reported 78 perineal prostatectomies on patients ranging in age from forty-five to eighty-four, with only 2 deaths, one from sepsis and the other shock. There were no cases of permanent incontinence or fistulae.

Dr. Hugh H. Young not only accepted his claim of originating perineal prostatectomy by midline incision, but states:* "Goodfellow deserves the credit of being the first to make a success of prostatectomy," all operations performed before 1891 being partial or incomplete prostatectomies. Wm. N. Wishard did a complete perineal prostatectomy October 23, 1891, and published it the following year. The first complete suprapubic prostatectomy was done by Eugene Fuller, 1904.

Goodfellow was also a pioneer in spinal anesthesia. He early became interested, and used it successfully in a prostatectomy at the San Francisco County Hospital in 1901. He was very enthusiastic for many years and then stopped. His explanation to the late Dr. C. W. Fish was that "several of these cases who have had spinal anesthesia have died in strange and devi-

ous ways, and I have returned to inhalation anesthesia because unlike spinal anesthesia you can at least stop administering it to the patient, but once you have given spinal anesthesia the drug is in to stay."

At the time of the San Francisco earthquake he was living at the St. Francis Hotel. His wife awoke him. He looked out of the window, talked about the slowness of the earthquake and went back to sleep. Several hours later, when he again looked out it was too late to save from the fire his books, etc. at the office (751 Sutter Street). He had an account of his experiences in the Spanish-American War almost ready for the publishers and it was destroyed along with all of his records. The small Oriental rugs in his apartment he saved, as he loaned them to Caruso and other members of the Metropolitan Opera Company to be used as blankets.

Shortly before this three of his club friends got him entangled in a dubious real estate transaction involving property at the corner of Gough and Market streets. After the fire they drew out leaving him legally responsible for the whole venture. He eventually lost not only his money but also confidence in his friends, so when, in 1907, Ephs Randolph, whom he had treated for tuberculosis in Arizona, offered him the position of Chief Surgeon of the Southern Pacific Railroad in Mexico, with headquarters at Guaymas, he left San Francisco broken in spirit.

He stayed in Mexico until March, 1910, when he became ill with multiple neuritis, presumably due to an old attack of beri beri. He suffered excruciating pains and was seen by various physicians none of whom concurred in his own diagnosis until he

* Surgery of the prostate. In: Keen's Surgery, 1906, 4: 438.

developed a wrist drop in April. He discussed his case quite frankly, and rather jokingly referred to those doctors who came to see him and would say that he had alcoholic neuritis, some because they did not like him and others because they did not know. He told his physician, Dr. C. W. Fish, that if he was doomed to be a cripple and unable to operate he did not want to get well. He died in the Angelus Hospital (Los Angeles) December 7, 1910.

A glance at the titles of his papers and the journals in which they appeared furnish one with a good estimate of the versatility and ability of this pioneer surgeon:

1. Cause of sudden death in thoracentesis. *Med. Rec.*, 16: 476, 1879.
2. A case of extraperitoneal rupture of the parturient uterus. *Am. J. Obst.*, 17: 930, 1884.
3. Typho-malaria fever. *Med. News*, 47: 527, 1885.
4. Note on the impenetrability of silk to bullets. *South. Calif. Pract.*, 2: 95-98, 1887.
5. Cases of gunshot wound of the abdomen treated by operation. *South. Calif. Pract.*, 4: 209-217, 1889.
6. The conduct of the Santiago Campaign from a medical standpoint. *Med.-Leg. J.*, 16: 308-313, 1898-9.
7. Perineal prostatectomy. *Occidental M. Times*, 16: 255-57, 1902.
8. Decapsulation of the kidney for chronic Bright's disease. *Calif. State J. M.*, 1: 391-394, 1902-3.
9. Median perineal prostatectomy. *J. A. M. A.*, 43: 194-197, 1904.
10. Decapsulation of the kidney for chronic Bright's disease. (Associated with Eaton, G. L.) *Internat. J. Surg.*, 17: 69-73, 1904.
11. Prostatectomy in general, especially by the perineal route. *J. A. M. A.*, 43: 1448-1450; 1452-54, 1904.
12. Perineal prostatectomy in prostatic hypertrophy. *Colorado M. J.*, 10: 466-469, 1904.
13. The Gila monster again. *Scient. Am.*, 96: 271, 1907.



A SHORT HISTORY OF THE SWEATING SICKNESS

By MANLEY BRADFORD SHAW, M.D.

BALTIMORE, MD.

I. INTRODUCTION

THE disease known in the annals of medicine as the Sweating Sickness first acquired its name in England in the 15th Century. Not until after its last appearance there in 1551, was an English treatise published concerning it. Its successor appeared one hundred and sixty-one years later in the character of a less virulent plague except in unusual cases. Today it is only a remnant of the original disease, and virtually devoid of danger.

Like the prophet in his own country the Sweating Sickness received no recognition from the physicians, but the numerous names (see Appendix) by which it was identified and the records of its malevolence attest to its importance. The "morbus cardiacus" of Asclepiades, Celsus, Galen, Aretaeus, Oribasius, Aurelianus, Alexander of Tralles, and Aetius, which attacked the ancients displayed symptoms corresponding to those of the sweating sickness. The English visitation produced the nomenclatures "Sudor Anglicus," "Sudor Britannicus," "the Sweat," the "Sweating Sickness," "the Ephemera of Caius," and also this curious entry in the parish register of Loughborough: "the swete, called new acquaintance, alias stoupe knave and know thy master." Because of its rapid spread during one epidemic (1528) it was also known as "the Posting Sickness."

The Germans called it "der Schweissfriesel," "Friesel" (confused with many diseases), "der Englische Schweissucht."

"Svette Miliare," "Svette de Picardy," "Suer Anglaise," were some of the many French names for the same sickness.

In Italy and Sweden, respectively, it was termed "Svette Migliare" or "Febbre Migliare," and "Englische Sved."

II. THE SWEAT OF THE ANCIENTS

There are references to a sweating disease among the works of the early Greek physicians and their contemporaries. Pothet, in a very interesting account of the disease, calls it "La Svette Ancienne, ou Morbus Cardiacus, ou Diaphores." Hippocrates, he says, has described miliary vesicles (5th century), while these others: Asclepiades (1st century A.D.), Aretaeus (2nd century A.D.) and Erasistratus (300 B.C.) described the cardiac symptoms "tumeur une obstruction du cour d'ou son nom, νοσος καρδιακη" Other authors whom Pothet has found mentioning this disease are Celsus (1st century A.D.) "de medicina, de cardiaco," Aretaeus (2nd century A.D.) "de curatione cardiacum," Oribasius (325-400 A.D.) "de cardiaco," Alexander of Tralles (6th century A.D.) "de effectu cardiaco," and Aetius (beginning 6th century A.D.) "de cardiaco." A reference not vague, however, is the account by Coelius Aurelianus in the 5th century A.D. (some put him in the 1st to the 3rd centuries). The English accounts of the sweating sickness tally very closely with Pothet's translation from the work of Aurelianus. This we shall quote:

The disease of the heart attacks more men than women, and principally the vigorous and plethoric type. It begins with a violent fever, the pulse is frequent, fast and small and it remains so through the acute period of the illness and even to the end. A burning thirst develops, hallucinations, great nervousness, and at the same time the knees, the elbows, and the legs become cold and numb.

It is most often the case that men in good health show these symptoms, but those who are run down are also attacked. To these tendencies is added that medical state under the influence of which asthenique conditions and lymphatic constitutions are multiplied.

When the disease becomes established its characteristics will be fully recognized.

It presents a sensation of cold and lethargy, which attacks the joints of the arms, the legs, the whole body. The pulse becomes quivering, unequal, and even disappears entirely.

The reason is affected, a profound despair seizes the patient, insomnia is sometimes noticeable. The whole body is covered with a heavy sweat. In the case of these, the sweat first appeared on the neck, the face and shoulders, being sticky and having the appearance and disagreeable odor of urine.

The respiration is short, painful, and it is accompanied by an intolerable oppression; the voice becomes feeble and tremulous, and the patient meanwhile believes himself suffocating. The chest expansion is painful, the tongue is very dry and cracked. . . .

When the attack increases it is observed that they have fainting fits. The nails become curved. In some, there is delirium, the heart palpitates violently, the face is pale, the eyes are sunk in the orbits.

A few maintain their reason until death, their skin shrivels, their eyes lacrimate involuntarily or run with pus, and the patient succumbs without ceasing to suffer.

If the disease does not end tragically, the pulse is relieved, the respiration

becomes easier. The patient takes courage, begins to eat and falls into deep sleep, as with great fatigue.

We shall see that this is a very good description of the English Sweating Sickness.

III. NATURE OF THE ENGLISH SWEATING SICKNESS

In order to know the character and the nature of the disease we may study the accounts from the contemporary authors. From Polydore Vergilio's description we may summarize thus: The patient is seized suddenly with a "fatal" sweat, with pain in the head and stomach, and a violent fever. His thirst is intense, and the feeling of heat so great that only a few bed-clothes can be endured. The sweat, the violence of which lasts only twenty-four hours, has a foul odor. This latter fact may have been due to the uncleanly condition of the bodies, for as yet even the old family washtub had not come into general use in England. It is also a disease of relapses, although Vergilio is not very definite as to the number or severity. Moreover, no age is immune, although in most cases the robust, middle-aged persons are attacked.

No further light is thrown on the nature of the Sweat until the time of Caius in 1551 from whom we learn these facts: That the disease is not only a sweat but also a fever, the sweat being the result of the latter, accompanied with nausea, vomiting and fluxes. As to the symptoms, there is, first, pain in the arms and legs; second, a "grief" in the liver and the stomach; third, a pain in the head with delirium; fourth, "a passion of the heart"; fifth, a heaviness or torpor with an intense desire to sleep, moreover, "the senses in all parts therefore,

left heavy and dull." "Last followeth the short abiding, a certain token of the disease to be in the spirits." In his

any one locality, are characteristic of the disease.

The treatment first adopted was dis-



FIG. 1. MAP NO. 1. FIRST EPIDEMIC, 1485. PLACES MARKED ACTUALLY REPORTED THE SWEAT. THE SWEAT APPEARED IN IRELAND IN 1491 AND 1492. ROUTE OF HENRY VII FROM FRANCE TO BATTLEFIELD OF BOSWORTH INDICATED BY BROKEN LINE.

treatment, Caius admonishes those nursing to watch particularly for "a swelling or blackness in parts and a tingling of the same." This tingling and prickling sensation is noticed just before or along with the appearance of the rash in the suette miliare, and might suggest the presence of an eruption here. Also the very sudden seizure, and its short and violent course, along with the brevity of the epidemic in

astrous, and to it may be attributed the high mortality of the first epidemics. It consisted of such drugs as were considered sudorifics, and very strenuous physical measures of producing sweating, such as lighting a tremendous fire in the room and closing all the windows, heaping bedclothes and feather beds on the patient with two good strong men to aid, should the patient object. This severe treatment was used in the

Netherlands in the epidemic of 1529 and there derived the name "the Netherlands' Treatment." An English physician was residing there at the time and convinced the Hollanders of the folly of this method but not until a goodly number had perished. By bitter experience it was finally learned that the best treatment was one of moderation, that is, comfortable weight of bedclothes, reasonable amounts of water, neither too hot or too cold, a moderate room temperature, and general supportive measures. Upon no consideration should the patient expose even so much as a hand or foot, and to this precaution may be attributed the fact that no eruption was observed.

Hecker makes note of the fact that a worthy Dutch physician, during the epidemic of 1529, described small vesicles which appeared on the limbs after the sweat was over. These were not confluent but rendered the skin uneven. "*Febrem sudor finiebat post se relinquens in extremitatibus corporis, pustulas parvas, admodum, exasperantes diversas et malignas secundum humorum malignitatem.*"¹ This same observation is noted in the Hamburg Chronicle with the addition that they had been seen on the dead.

When care was not taken that the hands and feet were kept under the clothes they died, and their bodies became as black as coal all over and were covered with vesicles, and stunk so that it was necessary to bury them deep in the earth by reason of the stench.²

Thomas More's daughter was afflicted with spots during a recurrence

of the sweating sickness, from which she subsequently recovered.³

Hecker's words on these eruptions are:

By these it is very likely that a miliary eruption, and perhaps spots also, are to be understood, yet every thing militates against suppositions that the phenomena was constant or that the sweating sickness was an eruptive disease.

He maintains that both in the course and nature are the miliary fever and sweating sickness distinct.

IV. THE SWEATING SICKNESS IN ENGLAND

First Epidemic (1485)

This disease evolves as a distinct epidemiological entity at the beginning of the reign of King Henry VII. His accession to the throne was the result of the battle of Bosworth, August 22, 1485, where his troops defeated the forces of Richard III after a short and decisive battle. Previous to the time of the battle there are two references to the sweating sickness. Hecker says: "... the report of it had already before this event [Bosworth] spread unusual terror; so that Lord Stanley, when authoritatively summoned by Richard to repair to his standard, sought to gain time, and, by way of excuse, alleged the prevalence of the new disease." Other authors also mention this fact. J. E. Webb gives a reference from Drake's "*Eboracum*:"⁴ "Wherein—all aldermen and such as were sojourning outside of York, on account of the plague, should repair to the city for council with Richard III against the invader." This reference is dated August 1, 1485, or four days

¹ Tyengius in Forest, p. 1586.

² Straphorst, Part II, Vol. I, p. 83, from Hecker.

³ Straphorst, *Vita et obitus*, Thomas More, C 6, p. 26.

⁴ 6, i, p. 120.

before the battle of Bosworth. That this plague is the "sweating sickness" one cannot be sure. There are statements to the effect that the "sweating sickness" was prevalent among the troops of Henry VII and although these are made rather by inference than by fact, it seems to be justified.

After the battle Henry proceeded at once to London and here the army was probably disbanded according to the custom of the day. That this move was a grave one with regard to the spread of the disease one can readily see, and particularly so since it is generally considered that the French mercenaries which Henry had obtained from Charles VIII carried the disease with them from France. It is a pertinent fact that these mercenaries came from the region in France which was to be the seat of the French "suetie miliare" one hundred and sixty-one years later.

These French mercenaries were wandering guerrillas, "vile landsknechte," whom Hecker says were assembled under Henry VII's banner at Havre. They had recklessly pillaged Normandy under Louis XII, and Charles VIII was only too glad to be rid of them.⁵

After gathering about 2000 French troops, Henry set sail from Harfleur and landed at Milford Haven seven days later. For his route of march to Tamworth where he camped until the battle of Bosworth (see Map No. 1). Throughout this march, which lasted three weeks, his force was augmented with partisan English so that any disease carried by the mercenaries would certainly be transmitted to the English troops. This rather rapid advance is perhaps the

reason why we hear no definite account of the disease, as it was not given opportunity to spread.

Caius says the disease began shortly after the 7th of August and lasted all that month and all of September. The Sweat reached London the 21st of September according to Hecker and lasted five weeks. A large part of the population fell sick but of the actual mortality there is no record.

Hecker states that it spread over all of England with the same severity as in London. Creighton says that the only definite references in regard to its spread are from Bristol Calander, Croyland Abbey, and Oxford. Its exact extent is uncertain.

J. C. Webb tells us that it appeared at Oxford at the end of August and lasted six weeks, killing most of the students and making the rest leave. He gives the date of its appearance in London as the 21st of September, but thinks it had abated enough by the 20th of October to allow the coronation of the king to take place. On the 11th of October, Mayor Thomas Hill was seized and died, and he was followed eight days later by his successor, William Stokker. It was also fatal for several aldermen; six is the number reported by Grafton, and Stow states four. Abbot Lambert Fosdyke died within eighteen hours after onset on the 14th of November. The plague did not become quiescent until December, 1485.

That it was severe we know from the work of Polydore Vergilio, an Italian scholar and man of affairs who came to Henry VII's court in 1501, and who described the epidemics of 1485 and 1508 (see Appendix). He says that out of those who sickened, not one in one hundred escaped.

⁵ Mézeray, To. II, p. 762.

The same year a new disease pervaded the whole kingdom, during the first descent of Henry into the island; a cold or very warm air was fatal. They discovered that the provoking of a sweat by heat and heaping on of

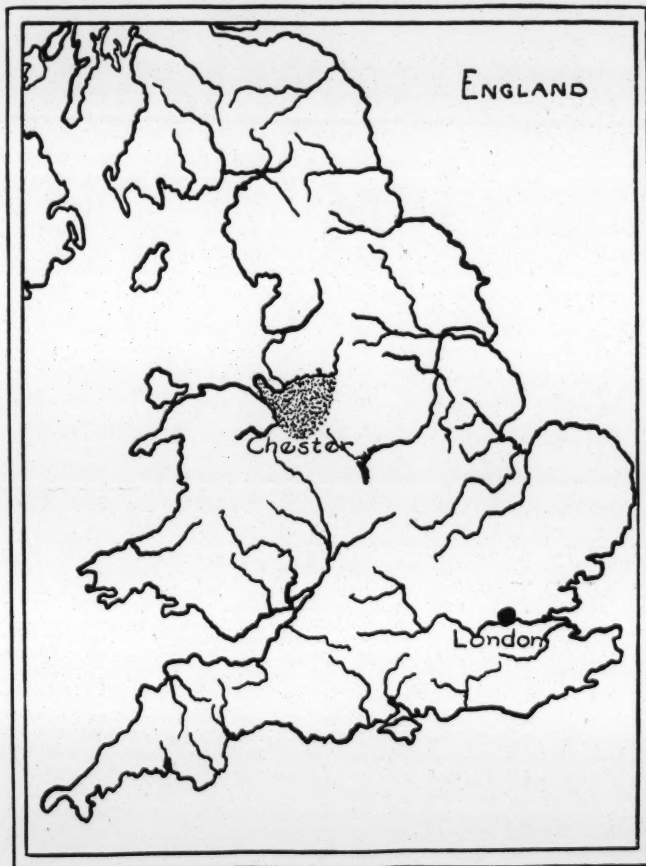


FIG. 2. MAP NO. 2. SECOND EPIDEMIC, 1508. PLACES ACTUALLY REPORTING THE SWEAT ARE INDICATED.

pestilence horrible, indeed, and before which no time of life was immune, a fact that is well known; suddenly a fatal sweat attacked the body, vexing the body with a pain in the head and stomach and a terrific heat.

It was attended also, according to Vergilio, with a great thirst, sweat of a foul odor and its duration was exactly twenty-four hours.

The sick were subject to relapses or re-infections and exposure to very

bedclothes was harmful and that the best course was to be moderate in the amount of clothes, drink, and food, as well as in temperature regulation. In regard to an eruption Creighton quotes Forrester:

... and this sickness commeth with grete swetying and stinking, with a redness of the face and all the body and a contynual thirst, with a great heat and headache because of the fumes and venoms. . . . And some had black spots

as it appeared in our brother Alban, a noble leech on whose soul God have mercy.

Forrester also mentions "pricking of brains," and directs attention to the heart, to the "pricking in their bodies." The accounts of Bacon and Hall, quoted by many authors, are taken from Polydore Vergilio, almost verbatim.

Most authors agree that the disease never in any of its visitations disseminated into Ireland or Scotland. J. C. Webb gives one reference from the Census of Ireland, 1851. "In 1491 or 1492 a sweating plague is said to have prevailed in Ireland according to the annals of the Four Masters; its attack was of twenty-four hours duration, Ware says, but we know not in what authority."

Second Epidemic, 1508

Of this outbreak there are only two records. One in the Great Britain Rolls (Annals of Great Britain) series by Bernard Andree, dated July 8, 1508, states the following: "About this same month certain of the thieves were seized by the sweat and died and many perished on all sides, on the streets in the city." Webb and Hecker give the date of this epidemic as 1506. Creighton explains this discrepancy by the fact that Hall's Chronicle was taken from P. Vergilio and not very carefully copied by Grafton before it reached Hecker's hands. Webb bases his date, however, on the Annals of Chester.⁶ This gives an account of 71 persons dying in a day, four or five of whom were women. Another account, he reports, tells of 91 deaths at the same place in three days. Creighton gives the date of the Chester epidemic as 1507 with a mortality of

⁶ Ms. No. 2125.

91 in three days. Hirsch says that in 1507 the Sweating Sickness broke out in London. All agree that this visitation was over by the end of autumn.

A letter of Erasmus in 1511 reveals that his health was indifferent "a sudore illo." This may refer to the lingering effects of the epidemic of 1507-08 or to the influenza of 1510 (Creighton).

Third Epidemic, 1517

More is known of the sweep of this epidemic than of the previous ones, through state papers, letters of envoys and private correspondence. It is generally conceded to have been the most severe in its mortality and virulence. Cardinal du Bellay in a letter states that 10,000 died in ten to twelve days. (He himself had the disease in 1528.) In comparison to the cholera epidemics this mortality, for such a short time, is exceedingly high (Webb). It respected no station of life. Ammonius Lucca, private secretary of the king, died of it, as did Lords Wilton and Clinton. "Of the commonsort they were numberlest that perished."

"On this occasion it was so violent and rapid in its course that it carried off those who were attacked in from two to three hours, so that the first shivering fit was regarded as the announcement of certain death." (Hecker.)

Hecker gives the date of the beginning of this epidemic as July, 1517; Hirsch, July, 1518, which is obviously wrong; however, in Creighton's work we have very definite dates. The Nuncio wrote from London to the Marquis of Mantua on the 1st of August, 1517, mentioning the beginning of the disease. In his letter of the

⁷ Godwyn, p. 27.

6th, H
topic
corres

Fig.

bas
enc
of
dis
co
wr
pl
to
fro
th
"

6th, he devotes three pages to the topic of sweating sickness. In the correspondence of the Venetian am-

There is some question of the spread of the disease to Calais at this time. Some hint that the English inhabitants



FIG. 3. MAP No. 3. THIRD EPIDEMIC, 1517. PLACES ACTUALLY REPORTING THE SWEAT ARE SHOWN. FROM THESE PLACES IT PROBABLY SPREAD OVER ALL ENGLAND.

bassador to the Doge, we have references on the 6th and the 12th and 27th of August. Cardinal Wolsey had the disease at this time and went to the country on the 21st of August. He wrote on the 26th of August that the plague was making progress. A letter to Wolsey on the 2nd of November, from the University of Oxford, excuses the delay in writing because of the "sweating sickness."

there were afflicted but no positive facts are at hand. No records of its being in Scotland or in Ireland are known.

It was a lengthy siege this time. According to Hirsch and Hecker this plague lasted six months. C. G. Grunner and Caius give its existence as from July to December, 1517. This evidence of hanging on is unlike its other appearances, being usually more "ephemeral" in nature.

Fourth Epidemic, 1528

In 1528 the sweating sickness outgrew the confines of England and

the printing press first made its appearance.

Hecker gives the first date of its



FIG. 4. MAP NO. 4. FOURTH EPIDEMIC, 1528. AREAS MARKED INDICATE LOCATION OF THE DISEASE.

spread throughout the Continent, sparing the more southerly located countries. This occurred about six months after the end of the English outbreak, as we shall see by noting the events chronologically.

The literature on this epidemic is considerable. In England there are many references in the contemporary writing. On the Continent, the disease called forth a flood of pamphlets, for it was not long before (1450) that

appearance in London as the latter part of May, 1528. Creighton says its first warning was the 5th of June. Webb, on the other hand, finds Hecker in error again, and declares that its first showing in London was the 14th of June and that it had been rife farther north before that: "For Sir William Parre, writing to Wolsey on the 31st day of May informs him that the Duke of Richmond had removed to Lediston in Yorkshire, by reason of

its prevalence, which place was three miles from Pontifact." It was, incidentally, from an unpublished letter of Du Bellay in the Cottonion Collection, to which Webb has had access⁸ that we learn of its spread from Sussex to London, and which gives the most interesting and graphic account. A summary of this is as follows:

Anne Boleyn's maid de chambre was seized with the "sweating sickness" on June 18, 1528. Henry VIII, on hearing this, fled precipitately and arrived at Waltham in Essex. Here two of his valets de chambre and two court ushers were stricken and the king again fled, this time to Hunston in Hartfordshire on the 21st of June. About this time, Anne Boleyn herself contracted the disease, but recovered. "The occasion of this illness produced one of that remarkable series of love letters which have since become so celebrated, and the originals of which are preserved in Rome. Happy, indeed would it have been for the ill-fated Anne, had the dart penetrated more deeply." (Webb)

A letter from Sir Brian Tuke to Wolsey mentions Anne's sickness and that of Lord of Rocheford. On the 29th of June, Wolsey himself removed to Hampton Court on account of sweating sickness.

The king, meanwhile, in the course of his flights, reached Tittenhanger in Hertford, where on July 1st two new cases appeared.

In another letter of Du Bellay it is stated that 45,000 have been attacked in London, 2000 of whom have died. In a letter of July 21st he states that the "Sweating Sickness is abating."

Creighton, quoting a letter of a Dr. Butts, says that 40,000 persons sickened in London by the end of June and

2000 died. Creighton also notes the interruption of the affair between Henry VIII and Anne Boleyn by the sweating sickness. As definite reference to the disease he gives Woburn as being attacked the 26th of June, a nunnery at Wilton, the 18th of July, and Beverly the 22nd of July. It was serious in Yorkshire generally, appeared in Cambridge the 27th of July and in places in Kent on the same date. By the 21st of August, Creighton reported the plague quiet.

The severity of this visitation may be judged by Du Bellay's figures of the epidemic in London and the fact that court was dissolved and in flight. The king and council also prohibited the feasts of St. John and St. Peter, and all public business was postponed.⁹

Though at this time, the disease is generally supposed not to have visited Ireland or Scotland, Creighton calls attention to a reference to a C. Smith, M.D.¹⁰ which indicates that the sweating sickness visited Cork in 1528.

Spread of the Sweating Sickness to the Continent

According to Creighton (1891) who had access to other records than those of Hecker, Calais was attacked on the 10th of July, 1528. Hamburg was attacked July 31, 1529 (Creighton) and blamed its sad fate on the visitation of "one Captain Hermann Evers." On board this gentleman's ship, in passage from England to Germany, twelve persons were victims of the disease, some of them dying after reaching Hamburg. In this place forty to sixty people died every day with a total of 1100 for twenty-two days. The peak of the disease was passed in two weeks with a death rate of 2000.

⁹ Hall's Chronicles, Henry VIII p. 750.

¹⁰ Ed. 2, 1774.

⁸ By Haliwell Imp. Lib. of Paris.

By the 8th of August the epidemic was at end. (Hecker)

Lubeck was attacked at about the same time (27th of July, 1529; according to Creighton, the 14th of August), when a woman died of the sweating sickness on that evening. According to Hecker's account from the Chronicle of Lubeck, the inhabitants died "without number." "In general, as everywhere, the robust young of the better classes were afflicted, while children and poor people living in cellars escaped." (Reimar Koch)

After this the spread is very rapid and erratic, though its general progress is in a radial direction, to the Northeast and South.

The sweating sickness appeared at Twicham, Bremen and Verdun by the 14th of August, at Mecklenburg and Stetten, Wismar, Demmin, Rostock, Stralsund and Greifswald around the 27th of August. On the 1st of September, Danzig, Augsburg, Cologne, Strasburg, Frankfort on the Main, Marburg, Göttingen and Hanover, all show evidence of the presence of the disease. At Strasburg, 3000 were taken ill but few died. Creighton says that by way of Hanover "the Sweat" traveled to Brunswick, Luneburg, Waldeck, Hadeln, Einbeck, Westphalia, Valley of Weser, and east Friesland. It reached Frankfort the 11th of September, and Worms shortly after. During the later part of September, Zwingli and Luther at conference on the doctrine of the Eucharist, fled hastily from Marburg.

At Augsburg it appeared on the 6th of September and lasted six days, afflicting 1500 and killing 800.

A large fair attended by merchants from all over Europe was held at Frankfort on the Main during the sweating sickness and Hecker suggests

that this may account for the diffusion throughout Europe.

Creighton thinks that the further progress of the disease was as follows: Königsberg, the 8th of September, Julich, Liege, and Cologne, the 15th of September, Speyer on the 24th of September, Freiburg in Breisgau, Mulhausen, and Gebweiler in Alsace in October. In November it overran the shore of Lake Constance, Wurtemberg, Baden, the upper Rhine, and the Palatinate. Provinces reached later were Franconia, Thüringen, Saxony, the Saxon Metal Mountains, Meissen, Mansfeld, Halberstadt, Magdeburg, Wittenberg, Lusatice, the Mark of Brandenburg and Silesia.

In Vienna the siege of Sultan Soliman was complicated by the presence of the sweating sickness from September 22 to October 14. In Switzerland, Berne, in December and Basle in January, 1530 were touched by the disease.

In the Netherlands it appeared the 27th of September, 1529, having made its way there from the regions about the upper Rhine. The dead in Antwerp numbered from 400 to 500, in the last few days of September, and at Zierikzee 3000 were said to have died subsequent to October, 1529. (Creighton)

On the 29th of September, 1529, Copenhagen was the scene of the plague, resulting in 400 deaths in a short time. Elsinore, according to report, suffered greatly. Denmark was next in the path of the sweating sickness, and finally the whole of the Scandinavian Peninsula fell victim. (Hecker)

It is also known to have spread into Lithuania, Poland, Livonia and Russia. Thorn and Kulm suffered, it is known. (Creighton) To what extent these countries were affected and the nature

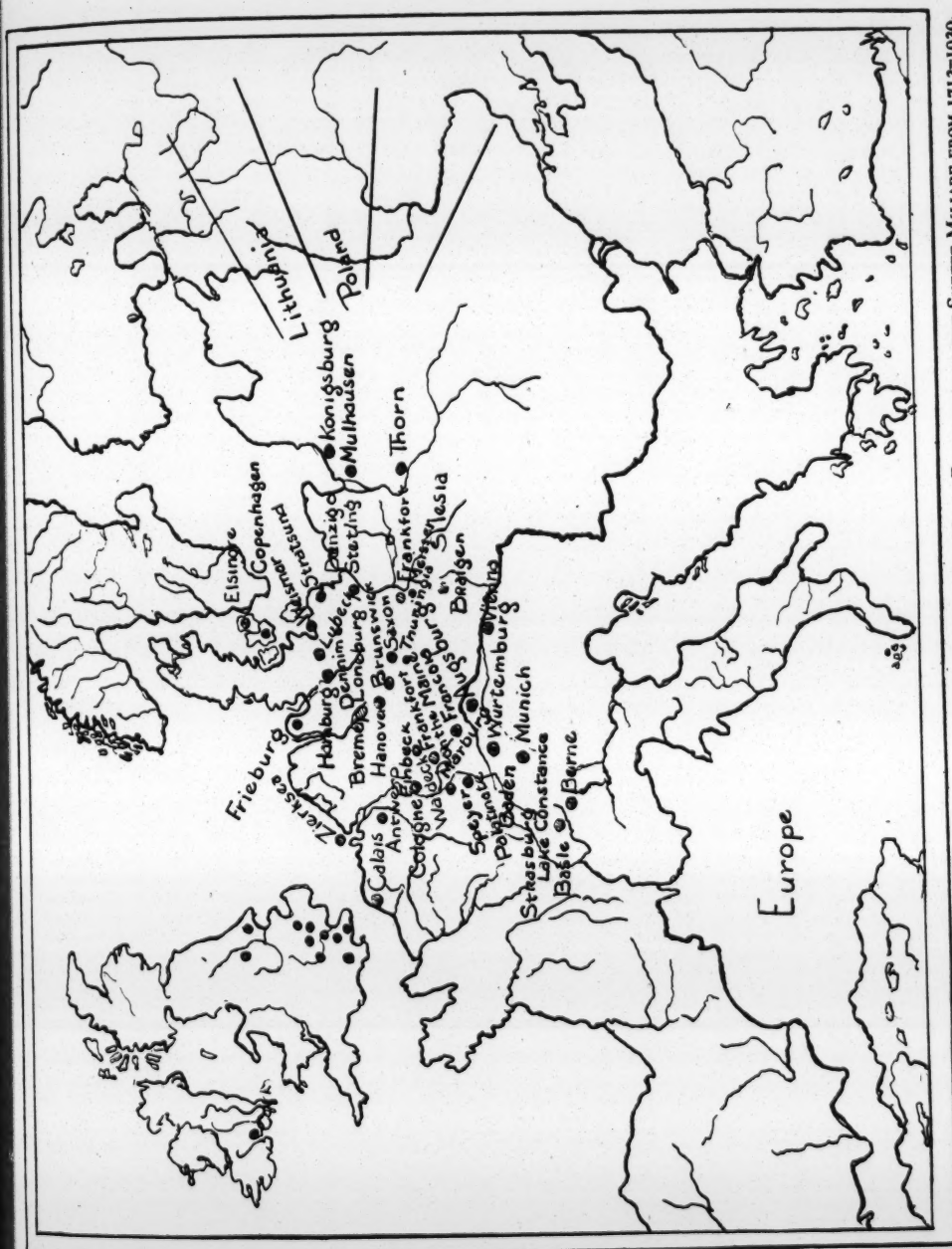


FIG. 5. MAP NO. 5, SWEATING SICKNESS IN EUROPE IN 1520. COMPARE WITH MAP NO. 9, REPRESENTING THE SUETTE MILIARE FROM 1712-1920.

of the disease and its spread, we have no knowledge.

The descriptions of the disease on the Continent are similar as to its nature, symptoms and effects and the records of Ericus Cordus, 1529, L. Erdiman, 1597, J. Vandenkastele, 1529, agree with those of P. Vergilio. The principal works concerning the continental manifestations, about twenty-one in number, are collected by C. G. Grunner in "*De Scriptoribus Sudore Anglico*."

Fifth Epidemic, 1551

This last scourge in England brought forth two treatises by a physician of the time, one Dr. Caius, who was practicing in London. Caius informs us that this outbreak began on the 15th of April, 1551, but a Ms. Chronicle of the town of Shrewsbury gives the 22nd of March (Webb, J. C.). The mortality was so great that one author (Godwyn) calls it a depopulation. One town, probably Shrewsbury, lost 960 within a few days. It spread to Ludlow, Presteign, and other places in Wales, thence to Westchester, Coventry, Drenfordi and the south before it reached London on the 7th of July. At the town of Loughborough, Leicestershire, in June, 1551, 19 persons died of the "sweat." Sixty students at Oxford were taken (Creighton). It was at its height from the 9th to the 19th of July, in London, and was not entirely gone until the 30th of July. Between the 7th and 30th, says Caius, over 800 died. Of these 600 succumbed between the 9th and the 16th. Machyn, a citizen resident of London, states that the Chancellor certified 872 deaths in the interval of the 8th to the 19th (Webb).

In July, also, it visited Cambridge, Huntingdon, Gloucester, Bristol, Dev-

onshire. In the north, York, Hull, Lancashire, Ulverston were attacked by the "sweat" in August, with a definite reference to the date as the 7th of August at Leeds (Webb).

"Many who could afford it fled from their fever stricken county to Ireland, Scotland, France and the Netherlands."¹¹ There are uncertain references to the disease among the people who fled from England, in these countries, and also in Spain (Hecker). Brassavolus in "*de morbo Gallico*" mentions a sweating sickness in Flanders, 15th of September, 1551. There is some doubt, however, as to the identity of the disease (Creighton).

The disease diminished in virulence towards the end of August and disappeared in September and has never since returned in a like form.¹²

V. NATURE OF THE SUETTE MILIARE

We will consider now the identity of the Sweating Sickness and the Suetta Miliare of the French which occurred in the 19th century. This descendant of the sweating sickness, or perhaps the sweating sickness itself, mollified with the course of time, retains many of the characteristics of the English plague. From a record of an epidemic in 1832, described by Menière, we will quote:

Women more than men, and robust adults, more than the children or the aged, were attacked. The attack began usually at night, with headache, sweating and dyspnea. These three things were always present but varied in intensity. The sweating in general was very abundant, skin hot, very red and itching, pulse large, slow and soft. The tongue was covered with a viscous mucus. There was a sense of weight in the precordia

¹¹ Shrop. Arch., Trans. Vol. 8, 1885.

¹² See report of cases, Part VII, Isolated Cases.

and po
noted.
The

Fig.

hea
swe
cha
nig
da
chl
ab
sol
ph
fro
a
to
an
th
T

and powerful abdominal pulsations were noted.

The headache was located in the fore-

siderably, and the fluid they contained was at first limpid, then cloudy, and afterwards, milky. It was partially reab-



FIG. 6. MAP No. 6. FIFTH EPIDEMIC, 1551. PLACES ACTUALLY REPORTING SWEATING SICKNESS ARE INDICATED.

head or vertex. In some instances the sweating was enormous, necessitating a change of linen twenty to thirty times in a night, and continuing for three or four days. Its smell appeared to be similar to chloruret, or the egesta in cholera. The abdomen was soft, stools seldom and solid, urine scanty, with no change in physical qualities. The sweating lasted from four to six days or more. In general, a vesicular eruption appeared on the 2nd to the 4th day, on the chest, neck, wrists, and back, and successively on the rest of the body, which sometimes was repeated. The size of the vesicles varied con-

sorbed and partially effused by rupture. The eruption lasted five to six days and convalescence followed so the disease never lasted more than a fortnight. The convalescence is rapid. In this epidemic there were no cerebral symptoms.

Ouvrieu in 1906 gives us additional data on the physical findings. With the dyspnea there were bronchial râles, disseminated, and on both sides, also a sense of suffocation and a feeling of constriction in the epigastrium. A cardiac murmur, an organic, blowing third sound was heard. The pulse was

140. High points of temperatures of three different individuals were 40.5°C., 40.8°C., 40.9°C. There were muscular cramps of the feet and hands, and fibrillary twitching of the facial musculature. Dysuria and albuminuria were found. There was intense lumbar pain at the least movement. A slight coryza was noticed.

Osler, in his *System of Medicine*, gives the following symptoms: The onset is abrupt with or without prodromata, the cardinal symptoms being fever, excessive, continuous sweating, great anxiety and depression with rapid and often tumultuous heart action and respiratory distress. After three to four days a rash appears, and with this the fever subsides slowly and slow recovery follows. Death may occur in a few hours or from three to four days after onset. "There is little reason to doubt the essential identity of miliary fever with the 'sudor Anglicus' or sweating sickness which swept over England between 1485 and 1551."

From Nelson's *System of Medicine* we may add to the symptoms already described, the fact that the rash is sometimes observed in the mouth, that often there is epistaxis. Along with the sweating there is a great thirst. A prodromal symptom not mentioned before is a feeling of chilliness. (The blood picture shows constantly a reduction of hemoglobin and a reduction of the red blood corpuscles.

The white blood corpuscle count is about 14,000, polymorphonuclears, 71 to 83 per cent, eosinophiles 2.5 to 6 per cent, though in some cases (two out of five) they were absent. The other cells not remarkable. May-Grunwald-Panchrome stain. La Blaye.)

The epidemics are usually localized in rural communities and are noted

for their sudden appearance and brief stay which is on the average of two weeks, although longer visitations are not uncommon. They occur in the spring, summer and autumn, very rarely staying in the winter. Excessively wet weather, particularly on the occasions when there are floods, seems to play a part in the inception of an epidemic. The disease has occurred, though, when there were apparently no associated circumstances.

We will tabulate here the similarities and the differences of the sweating sickness and the suette miliary. They are alike in:

- (a) More or less sudden onset
- (b) No prodromal symptoms
- (c) High fever
- (d) Copious and continuous sweating
- (e) Headache, which was severe
- (f) Dyspnea
- (g) Severe cardiac symptoms
- (h) Abdominal pain (epigastric)
- (i) Great anxiety and depression
- (j) Precordial pain and palpitation
- (k) Abrupt origin of epidemics, and their short duration
 - (l) Attacks began at night (usually)
- (m) Robust adults were the favorite victims
- (n) The disease was epidemic
- (p) Likelihood of relapse
- (q) Peculiar odor of the sweat
- (r) Retention of urine
- (s) Nausea and vomiting might occur
- (t) Purpurial hemorrhages, occasionally
- (u) Pains in the extremities
- (v) Torpid or comatose condition as death approached
- (w) Symptoms of central nervous system involvement in last stages
- (x) General occurrence after floods and rainy seasons.

The English sweat differs from the suette miliary in:

- (a) Its virulence and high mortality
- (b) The fact that its vigor was over in twenty-four hours
- (c) There was no definite mention of an eruption
- (d) The disease was apparently not endemic
- (e) It conspicuously avoided France
- (f) The suette miliare conspicuously avoids England.

VI. THE SUETTE MILIAIRE

In France

No satisfactory explanation for the reappearance of the sweating sickness after one hundred and sixty-one years is forthcoming. Indeed, some authorities deny that it did reappear, among whom are Hecker, Ozanam, Littré, and Anglada. The consensus of opinion now is, however, that the suette miliare or Picardy sweat is a less malignant form of the sweating sickness.

The reasons for not believing in their identity are: The sudden disappearance of the disease and the extremely long period when it was not in evidence; the appearance of a rash of miliary vesicles in the Picardy sweat; the comparatively mild course of the Picardy sweat. However, the disease may have maintained itself for that period of time in many isolated, widely diffused, sporadic cases which were not recognized. The fact that the English physicians did not notice the breaking out on the sick, was perhaps due to their fear of exposing their patients. (Aurelianus and P. Vergilio make note of some sort of eruption.) Against the usual mild course of the later epidemics may be cited the unusual virulence of one at Rottengen in 1802 and the mortality of 20 to 50 per cent in some of the smaller localized epidemics in

France, which displayed the characteristics of true "sudore anglico."

Hecker states, however, that there



FIG. 7. FEBBRE MILIAIRE. CASE REPORTED BY BUSACCHI.* PATIENT WAS TWENTY-ONE YEARS OF AGE, MALE, AN ENLISTED SOLDIER OF THE ITALIAN ARMY. ATTACK BEGAN WITH FEELING OF NAUSEA AND UNEASINESS, FOLLOWED BY FEVER WHICH ROSE AS HIGH AS 39.5 C., WHEN A FEELING OF CONSTRICTION AND PAIN IN EPIGASTRIUM WAS EXPERIENCED, AND HEART PALPITATED VIOLENTLY AND WAS SOMEWHAT IRREGULAR. A PROFUSE SWEAT BROKE OUT WHICH WAS FOLLOWED BY AN ERUPTION OF MILIARY VESICLES AS PICTURED. PICTURE TAKEN WHEN ERUPTION WAS AT ITS HEIGHT. THIS IS REPORTED AS A TYPICAL MILIARY ERUPTION. (AFTER BUSACCHI.)

may have been an epidemic of sweating sickness in Germany in 1652, the location of which he does not mention.¹³

At Montbéliard in 1712 a disease broke out which had all the marks of the Picardy Sweat. Foucart says, "which was of the nature as the English Sweat of the 15th and 16th centuries."

Of the further French epidemics we are indebted to Thoinot and Ribierre for a careful summary.

From 1712 to 1800 the sweat showed itself in four distinct, recognized groups which have been classified in the following fashion: (a) Northern Group; Picardie, Normandie, Ile-de-France, Orléanais, corresponding to the actual departments of Pas-de-Calais, Nord, comme, Seine-Inférieure, Eure, Calvados, Manche, Aisne, Oise, Seine-et Oise, Seine, Seine et Marne, Loiret. This group was in the 18th century, the greatest seat of the

* Bull. d. rc. med. de Bologna, 1917.

¹³ Godfredi Wilschii, Hist. Med. — morbum continuens. Disp. d. 20, April, 1655, Lipsiae.

sweat, Picardie having been first attacked in 1718. (b) Eastern group: Alsace, Franche-Comté, Savoie. (c) Central Group: Auvergne. (d) Meridional Group: Languedoc where the epidemic of 1782, as told by Pujal, marked a disastrous passage of the sweat. [See Map No. 7.] The sweat established itself as an endemic disease in the 19th century in the following centers: in the North, a group is formed by the departments of Pas-de-Calais, Nord, Somme, Aisne, Oise, Seine-Inférieure, Eure, Seine-et-Oise, Marne, Seine-et-Marne. On the West, a group is formed by: Indre-et-Loire, Deux-Sevres, Vienne, Charente-Inférieure, Charente, Dordogne, Lot-et-Garonne. On the East: Haute-Saone, Doubs, Jura, Isere. In the Center: Puy-de-Dome, Lozère. In the Middle: le Var, in one part; les Pyrénées-Orientales, l'Herault et l'Ade, on the other part.

We do not enter into the details and exact localizations of these centers; we say only that the indication of a department as an endemic center does not imply that the sweat was endemic in all the departments; the centers are ordinarily located within a given department, disseminated at variable points and sometimes even localized at a very limited point.

As to great centers of epidemics we may mention: the epidemic of 1821 (Oise); epidemic of 1832 (Oise); epidemic of 1841-42 (Dordogne, Charente, Lot-et-Garonne, Tarn-et-Garonne, Deux-Sevres); the epidemic of 1849 (the sweat coincided with the cholera, covering a vast extent of French territory, but at disseminated points; Somme, Seine-et-Oise, Oise, Aisne, Marn, Meuse, Jura, Deux-Sevres, Haut-Vienne, Gers, Yonne, Meurthe-et-Moselle, Puy-de-Dome); the epidemic of 1887 (Vienne, Indre, Haut-Vienne, Deux-Sevres); the epidemic of 1901 which struck many

cantons of Charente-Inférieure and Deux Sevres.

Speaking of the effects of the epidemics Thoinot says: "The epidemic of 1832 in the Oise, affected in a limited territory twenty-four communities and seized over five hundred people."

The epidemic of Perigord described by Parrot, affected in three arrondissements of Nontron, Perigueux, Riberaç, twenty-four communities, and 10,800 people.

The epidemic of 1842 in Lot-et-Garonne, struck the arrondissements of Villeneuve, Agen, Marmande, and affected more than 2300 individuals.

The occurrence of the epidemic of 1887 does not contradict the facts acquired on the morbidity; in many communities the proportion is reported variously as follows: "1 to 4; 1 to 6; 1 to 12; 1 to 20."

In conclusion, on the topic of distribution of the disease Thoinot and Ribierre make this statement:

We have not the documents for the rest (the more recent epidemics) but we are persuaded that the actual endemic center is of vast extent, and that the sweat is not an affection seen in extinction but a disease in progress, more ignored than absent.

Hirsch gives us the statement that between 1718 and 1874 there were 184 epidemics, 126 of which occurred in a strip of country in the Northeast of France. The remaining 85 have broken out in isolated spots (though sometimes widely spread) in a few regions in middle and south France, particularly in Auvergne, Allier, Dordogne, and Poitou.

The sweat has occurred in connection with other diseases, namely, cholera, smallpox, and scarlatina; with

the cholera in Picardie in 1832, and in Picardie, and Franch-Comté in Auvergne, in 1849. During an epidemic in Poitou in 1887, one case of the sweat was seen with the smallpox by Thoinot. In 1906, in Charente, smallpox occurred with the sweat,¹⁴ adults having the sweat and infants the smallpox.

In Italy

The Suetto Miliare or the Suetto Migliare, as it is known in Italy, first gets vague mention there between 1715 and 1735. Hirsch declares that these references are confused with exanthematic fever, scarlet fever and other similar diseases. The first accurate account is, according to him, at Novara in 1775, by Allinni de Augustus. The Suetto then became endemic over all the northern part of Italy. A. Montalano in a letter to a friend from Livorno dated August 10, 1850 describes the typical symptoms and the cure. A description of the Suetto occurs again in 1871. In 1885 to 1886, this fever was given as the cause of 142 and 175 deaths respectively (Davidson, Febbre Migliare). A. Bussachi in 1917 reports a case and includes pictures of the vesicles. Shurr gives the following epidemics: Piedmont, 1717 and 1720, Cori, 1720 and 1742, Savigliani, 1753, Acqui 1726, Pignerol, 1730, Fossano, 1731, Nice and Rivoli, 1731, Zante, 1734 to 1744, Savigliani, Zante, and Suze, 1759, Valenza, 1755, Chambery (France), 1728 and 1758, St. Jean de Maurienne, 1741, Friouli, 1839.

¹⁴ The dates for the more important French epidemics are as follows: 1712, 1718, 1782, 1821, 1832, 1839, 1841-42, 1845, 1849, 1851-54, 1857, 1862, 1864, 1866, 1880, 1887, 1904, 1906, 1909-10, 1912, 1922, 1926.

In Germany and Other Countries

In Germany, accounts of the disease are at Lubeck in 1732 and in 1742, at Rostock, 1734, Prague, 1735, Goslar and Halberstadt, 1737-1738, and Leimbach in 1752, according to Shürr. These early accounts are somewhat confused, however, with the vague Friesel and puerperal fevers. At Werttemberg, in the winter of 1801, a disease can be positively identified as the suette miliare (Hirsch). Persons succumbed in twelve to twenty-four hours (Shürr). The Schweissfriesel was seen at Giengen in 1820, at Baviere, Souabe and Franconia in 1825. Cholera appeared with the disease at Rothal in 1828, Steyermark, 1826, Munich, 1836-37, Tarnow, 1839, and Bavaria, 1844. Hirsch states the Suetto had the character of an endemic plague in Bavaria in 1828, being found in upper Austria in 1836 and in Wegeleben in the circle of Oscherslchen in 1849.

There are newspaper reports of the disease in Switzerland at Basle, 1733 and Coire, 1744, but Hirsch says these do not deserve much credence. Newspaper reports from Biscaya in Spain at this time indicate the presence of the Suetto, but again are not reliable sources.

In Belgium it occurred at Hennegan in 1838, and appeared with the cholera at Liege, Namur, Hotton (in Luxemburg) in 1850, and its final visitation in Luxemburg, in 1866, was coincident with cholera.

VII. ISOLATED REPORTS OF THE SWEATING SICKNESS

Reports of cases from widely scattered points on the earth's surface occur in the more recent literature.

1. J. A. Lawrie, surgeon to the Glasgow Infirmary, April 28, 1846. Lawrie checks the symptoms and the

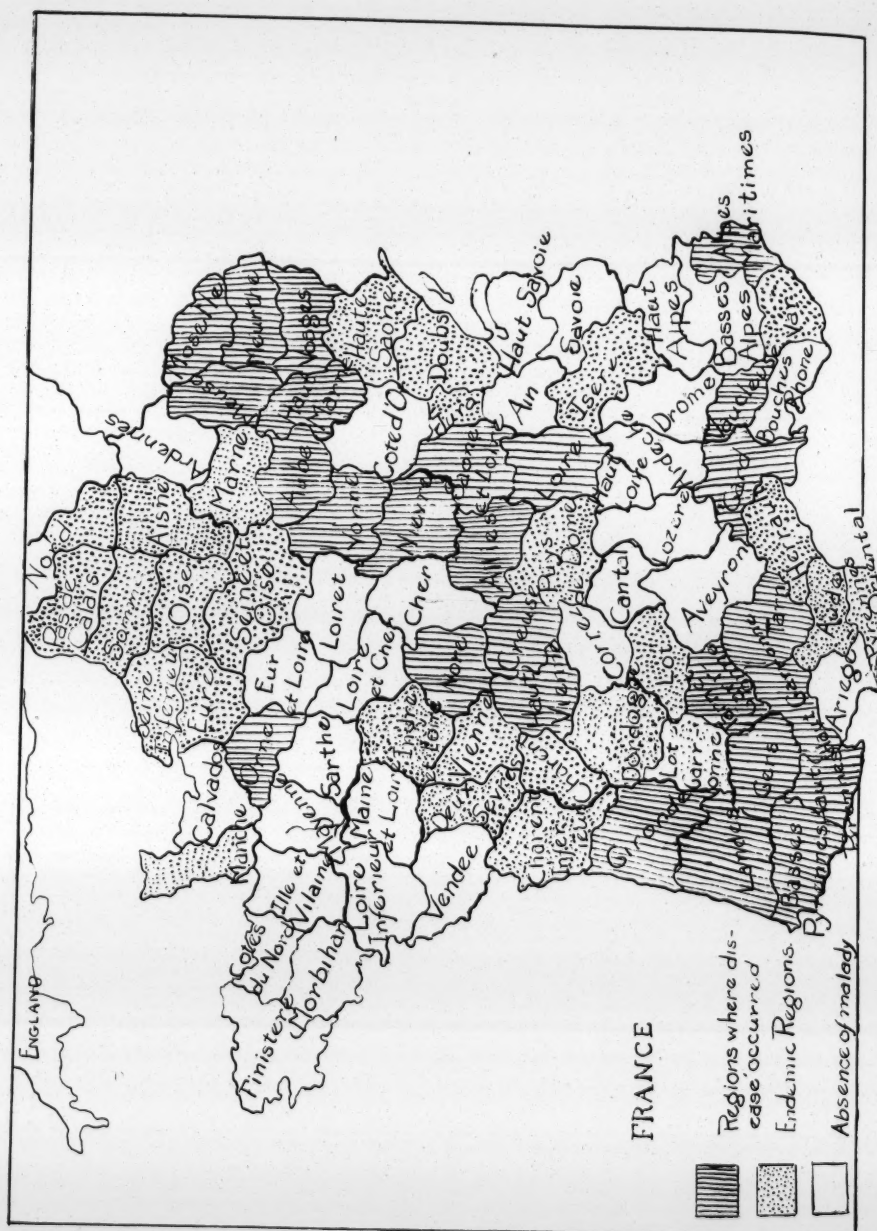


FIG. 8. MAP No. 7. SUEITE MILIAIRE IN FRANCE, 18TH CENTURY.

course of the disease with the account given by Caius. No eruption.

2. J. Murray, assistant surgeon to the Bengal Horse Artillery, 1839. Reports cases coincident with cholera in which a profuse and fetid sweat occurred. The other symptoms are the classical ones of sweating sickness. No eruptions.

3. A. B. Shaw, practicing physician, Saint Louis, 1873. September 8, 1873. Case of German girl of thirteen. Rather a long prodromal course of chills and fever followed by a very profuse sweat and typical miliary vesicles.

4. G. F. Turner, military physician at Fort Snelling, reports an epidemic of miliary fever in the winter of 1842 among the children of the fort and among the Sioux Indians while on their winter hunt. The Indians were attacked irrespective of age or sex. In the memory of the oldest Indians the disease had occurred twice before. It was comparatively mild. There was no sweating but all the other symptoms were typical.

5. W. C. Douglas. Reports an epidemic of miliary fever in the vicinity of Boston, 1750. From his description he is most likely dealing with three diseases; diphtheria, scarlet fever and puerperal fever.

6. Sir Richard Blackmore, M.D., 1750, describes a miliary fever which seems identical with the French *suette miliare* (see Appendix). Sir David Hamilton, F.R.C.P., and a member of the Royal Society and Physician to Queen Anne, has a paper on the cure of the miliary fever in the same pamphlet volume, "A Subject to Mithridates, King of Pontus," 1751.

VIII. CAUSE OF THE SWEATING SICKNESS

The causative agent of the disease is unknown. It is apparently infectious

and contagious in nature, while the spread is analogous to that of influenza, in rate and manner.

The older accounts give the various cosmic phenomena, earthquakes, meteors, comets, plagues of insects, hanging suns, floods and inundations; or the presence of armed conflict in the land, with its trail of putrefying bodies; the vapors and mists arising from the swamps; and the habits, diet and living conditions of the people. As these were the cut and dried causes then given for all epidemics we will only consider them as interesting, and nothing more.

One practically constant feature is however, the occurrence of floods and inundations before the greater part of the epidemics. M. M. Chantemesse, Marchoux, and Haury have suggested a very plausible explanation of this. They blame the field mice as either the direct carriers or as hosts for infected lice. In a moderately wet season the burrows of these mice are not flooded, but when the deluge is so great as to cause many rivers to overflow their banks, the field mice are forced to flee their burrows and seek the human habitations for shelter. This explains very nicely the peculiar manner of spread in some instances, and the fact that the French epidemics are localized in rural hamlets. Epidemics not associated with floods could conceivably be caused by a local overpopulation of mice causing them to invade houses for food; or a local destruction of the natural source of their food might give the same result. Such local and general migrations of mice are known to occur.

Cultural methods on the blood, cerebrospinal fluid, and contents of the vesicles give negative results. Inoculation experiments on animals

and man are also devoid of success. Microscopically, nothing is seen in these fluids. Hamill has found a motile coccus in the vesicular fluid and others have found a colon type of bacillus in vesicles and lymph nodes. This evidence is not convincing.

Le Blaye finds an eosinophilia in three out of five cases, suggesting that it may be of value as a diagnostic sign. It might raise a question of an animal parasite.

IX. PATHOLOGY OF THE SWEATING SICKNESS AND SUETTE MILIAIRE

There is no record of any pathological finding on the English sweat, and the record available to us of the pathology of the suette miliare are of little value.

There was found, regularly, a congestion of the brain and the meninges, and a marked engorgement of the visceral blood vessels. The heart muscle is soft and flabby. The blood has been seen to be very dark and to have some change in its clotting properties. Shürr reports a gelatinous or fibrinous coagulation of the urine, also an increased vascularization of the semilunar and greater and lesser sympathetic ganglia and tenth nerve, with a yellowish coloration of the same.

Shürr states also that the liquid in the vesicles is yellowish and opaque and filled with a cellular debris. Some have found a fungus growth in the vesicular fluid.

The very important question of the state of the sweat glands seems to be entirely neglected. One author states that he considered the sweating to be of cerebral origin and not localized in the sweat glands.

One observer, according to Shürr, found vesicles on the pericardium and aorta.

It is agreed that the bodies putrefy very rapidly after death, an advanced state of decomposition being found within twelve hours after death.¹⁵

X. DISEASES RELATED TO THE SWEATING SICKNESS

We have mentioned before the confusion in the early German literature as to the distinctness of the disease; the early writers include puerperal fever, petechial fever, smallpox, and various other exanthematous fevers under the term of "Friesel." Allionius, an early Italian writer differentiates also arthritis, podagra, peripneumonia, miasmatic fever, putrid fever, intermittent fever, and "morbillus" from the suette miliare.

Cholera, however, holds the position of prime interest. Its appearance preceding, or following the suette miliare in France during a number of epidemics in the 19th century has led many writers to search for an explanation of their concurrence. No satisfactory relationships have been established. The two diseases have been observed at the same time in the same individual (Hirsch).

Roux has observed repeatedly aberrant forms of cholera, which he has called "cholera cutane ou sudoral." The typical cholera symptoms have been aggravated by an exceedingly profuse and drenching sweat, "the sweating form is not a form of the Indian cholera, but a new disease concomitant with cholera, which only exists with it, which requires especial name, and arranges itself outside the class of nervous diseases." An eruption was zealously looked for in these cases but was not found in any instance. Murray's cases at Malwah,

¹⁵ An autopsy report is published in *Oesterr. San. Wes. Wien.* 13: 495, 1901.

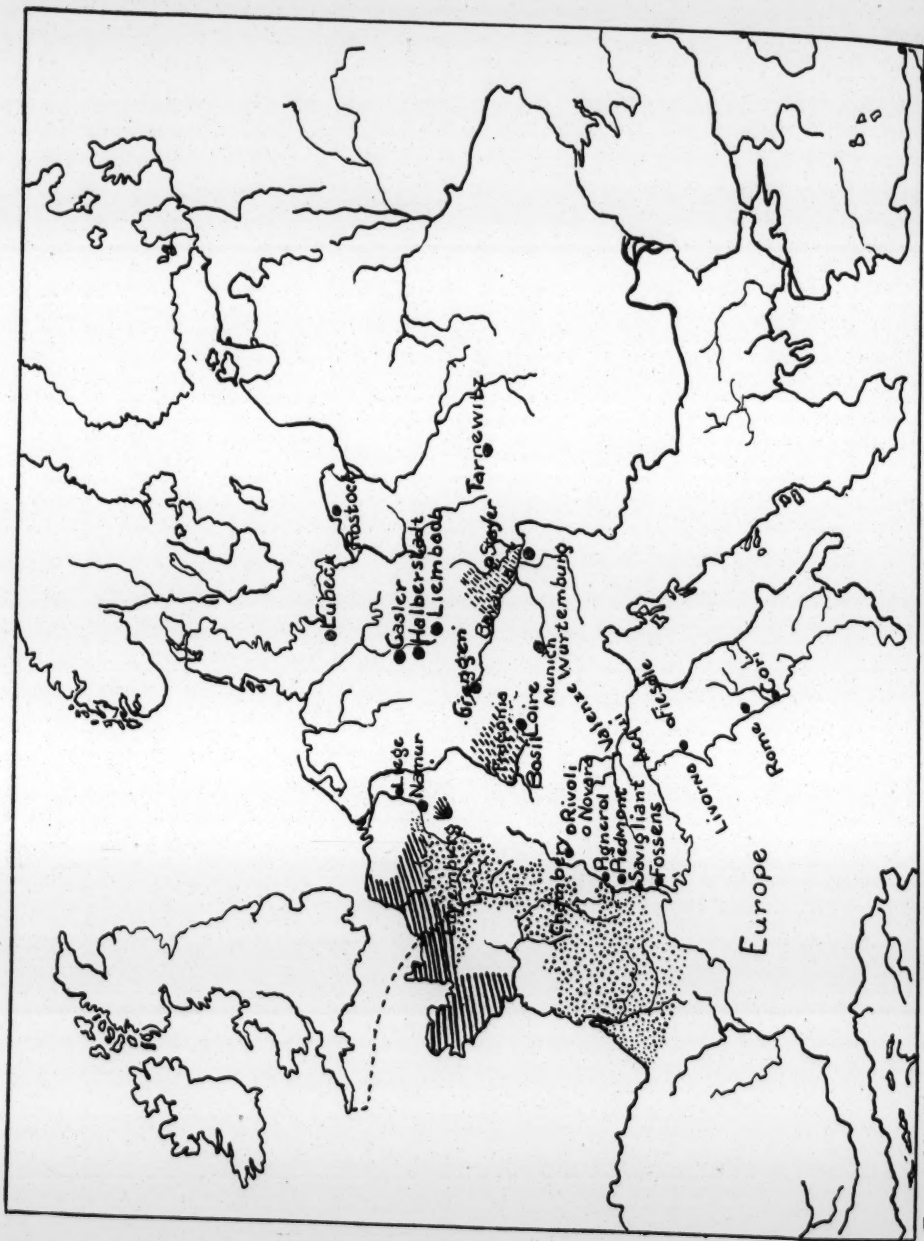


FIG. 10. MAP No. 9. SUETTE MILIAIRE IN EUROPE, 1711-1829. LINED AREA SHOWS PARTS FROM WHICH HENRY VII RECRUITED HIS TROOPS IN 1485. DOTTED AREA INDICATES EXTENT OF DISEASE IN FRANCE. DASHED LINE INDICATES EXTENT OF SUETTE IN OTHER COUNTRIES. (Continued)

India, and Cullen's cases at Seoni, India are probably of this same species. Bonnescuelle de Lospinais has summarized the literature on this form of the disease in a Strasburg thesis. It has been called cholera of the skin.

Gerster¹⁶ says that after careful re-reading of Hecker and by employing the method of exclusion he is convinced that the English sweat was one of the old virulent relapsing fevers, which are uncommon today. He supports this conviction by the relapsing nature of the disease and by the fact that its spread is similar to the lichenborne relapsing fevers of the present day.

XI. APPENDIX

I. Synonyms

Cardiacus.....	Greek physicians
De peste Britannica....	J. Schiller
Der Englische Schweiss.	German
Die Englische Schweiss-	
sucht.....	Gruner
Der Engelske Sved.....	Gerster
De miliarum morbo....	Steinöch
Diaphoretici.....	Aurelianus
English Sweating Sick-	
ness.....	English
English Sweat.....	English
Engelshe Svetten.....	Gerster
Engelske Sweetsiechte..	Gerster
Englischer Schweiss.....	Gerster
Ephemera.....	Caius
Ephemera sudorifica	
Britannica.....	Gruner
Ephemera protracta....	Gruner
Febris cararacia.....	Gruner
Febris continua.....	Gruner
Febris miliaris.....	Italian
Febris putrida Picardes.	Bellot
Febris pestilens.....	Gruner
Febris putrida.....	Gruner
Friesel.....	German
Frieselauchslag.....	Immerman
Fièvre de Dunkerque...	Thoinot et Robiérre
Hungerpest.....	Gerster
Hydronose.....	?
Hydropyretose.....	?

King of England's Sick-	
ness.....	?
La suette ancienne....	Pothét
La maladie de terre fran-	
çaise.....	Ovrieu
La maladie des faïres...	Foster
La maladie régnante....	Crépin
La suette.....	Gerster
Miarola.....	Allionnius
Miliarum.....	Allionnius
Miliary Fever.....	General term
Miliaria.....	General term
Morbus cardiacus.....	Pothét
Morbus acutis.....	Pothét
Morbus Anglicus.....	Gerster
Morbus sudatorius.....	Gerster
Moteegiree.....	Indian (Cullen)
Nosocomica nanalis....	Grünner
Paneegiree.....	Indian (Cullen)
Pourpre blanc.....	Allionius
Plaigh Allais.....	Irish-Census 1851
Plaigh iongnathack....	Irish-Census 1851
Posting sickness.....	Creighton
Picardy suette.....	French
Schweissfreisel.....	German
Schweiss-krankheit....	Gerster
Schwiessucht.....	German
Schwitzblattern.....	German
Schwitzende Seuche....	Gerster
Sudor anglicus.....	English
Sudor Britannica.....	English
Suette miliare.....	French
Suette migliare.....	Italian
Sudamen (exzema suda-	
men).....	Immerman
Sver anglaise.....	Swedish
The Sweat.....	English
The Sweating Sickness..	English
The swete called new	
acquaintance, alias	
stoupe-knave and	
know thy master....	Parish Register
	Oughborough
The Great Dying.....	Gerster
The Great Mortality...	Irish census 1851
Venum de terre.....	Chantemesse, Mar-
	choux and Haury

II. Quotations from Original Works

Lack of space prevents the inclusion of many quotations fully as interesting as the following:

First Epidemic in England

"In this same yere a new kynde of sickness came sodainly through the whole region,

¹⁶ Johns Hopkins Hosp. Bull., 1916.

even after the first entering of the kyng into this Isle, which was so sore, so paynefull and sharp, that the like was never hearde of, to any man's remembrance before that time." Grafton Chronicle of England, 146-160.

"All in maner assone as the sweat take them, or within a short space after, yelded up their ghost."

"And in this his amendinge, one poynte diligently above all other is to be observed and attended, that he never put his hand or foote out of ye bed to refresh or coole him selfe. But l.v. yere after (1530) it sayled into Flannnders and after into Germany, where it destroyed people innumerable for lack of knowledge of the English Experience." Halls Chronicles, Henry vii.

Description of the invading French army of mercenaries.

"A sort of vagabonds, rascals, and runaways, A scum of Bretagnes, and base lackey peasants;

Let's whip these stragglers o'er the seas again;
Lash hence these overweening rags of France,
These famished beggars, weary by their lives."

—Shakespeare

A Dr. Forrester says: "And this sickness cometh with grete swetyng and stynkyng, with redness of the face and all the body, and a contynual thirst, with a grete hete and hedache because of the fumes and venoms."

"Kynge Henry the Seventh entered the realme of England, and landyd at Mylford haven with his army out of Britayne in the monthe of August in the yere of our Lord 1485." The Chronicle of Calais.

"The King (Charles viii) was then at Langeais who received him very kindly. And a great number of English, Landing every Day in the Ports of France to joyn him (Henry vii), he gave him some broken Companies that were in Normandy, with which he adventured over into England." Mézeray (1683).

"The sweating began the 21 of September, and continued until the end of October; of the which sickness, a wonderful number dyed, and in London besides others, dyed Thomas Hill, Maior, in whose place was chosen Stocker, who likewise deceased about 7 daies after; in which place departed other 4 Aldermen, Thomas Iland, Richard Rawson, Thomas Norland and John Stocker, and then was chosen Maior John Warde, who continued

till the feast of Simon and Iude." Stowes Chronicle (1631).

Second Epidemic in England

"The same year (1485) a new disease prevaded the whole kingdom, during Henry's first descent into the island, a pestilence horrible indeed, and before which no age could endure, a well-known fact; suddenly a fatal sweat attacked the body wracking it with pains in the head and stomach, moreover there was a terrific sensation of heat. Therefore the patients cast off the bed coverings from the beginning, as some of them suffered less heat if they lay in bed; if they were dressed they stripped off their clothes, the thirsty ones drank cold water, others suffering from this fetid heat, provoked a sweat which had a foul odor, by adding bed clothes, all of them dying immediately or not long after the sweat had begun; so that not one in a hundred evaded it. Nor did any art of medicine or science avail to help it, meanwhile, for this strange disease escaped all their knowledge. In fact, after twenty four hours (the severity of the disease continued for that length of time) the sweat departed bringing this conclusion i.e. that they were not cleansed by the sweat as many of them perished. But that fact pointed out a final measure in the treatment for this great torture; those who had sweat once, since they sickened again, put into use those things which they had discovered to have been beneficial in the first attack. Evenso, when the calamity befell the sickly race again, (1508) from earlier observations they had forgotten how to care for themselves, in order that they might bear more easily the strenuous sweating. Thus from experience, after such a huge slaughter of human beings, it follows that the most prompt relief should have been found, which was this: if anyone was seized during the daytime he should go to bed forthwith, with his clothes on; if, while he was in bed at night, he should lie quietly and not move from that place, remaining so for twenty four hours exactly, covered with not enough bed clothes to provoke the sweat but just enough to allow him to sweat spontaneously, taking no food, if possible to bear the hunger, and drinking no more water than usual or of less warmth, which should satisfy in a way and quench the thirst; in the first stages of this treatment care should be taken that there should be no occasion

either for warming up or cooling off the hands or feet as to do so means death. Such was the treatment found for this plague which covered so much of England at this time and in times past has so often afflicted it, for the first year that Henry began to reign was remarkable for the plague, which was taken by many as a bad omen." Polydore Virgilio (1570) (Translation).

Third Epidemic in England

"In the very ende of May began in the cite of London the sickness called the sweating sickness, and afterward were all the realme almost of the which many died within v or vi houres. By reason of this sickness the terme was adiourned and the circutes of the Assise also. The King was sore troubled with this plague, for divers dyed in the court, of who, one was Sir Frannces Paynes which was Ambassador in Spayne." Henry VIII.

"About the feast of Damias began the sweating sickness of the which many men died suddenly in the beginning thereof, and this plague continued till Michaelmas and many died thereof in the court, as the Lord Clinton, the Lord Grey of Wilton, and many other knights and gentlemen, by reason of which contagious sickness Michaelmas terme was adjoined. After this to wit, in the winter was a great death of pestilence, almost over all England, in every towne more or lesse, wherefore the king kept himselfe with small company about him, willing to have no resort to the cort for feare of infection." Stowes Chronicle (1517).

"In August and September, the Sweating Sickness (termed beyond the Sea, *Sudor Anglicus*, or the English sweat) began, a disease utterly unknown to former ages. Of the common sort there were, numberlesse, that perished by it. Of the Nobilitie the Lords Clinton, and Grey of Wilton. The symptoms and cure you may find in Polydore Virgilio in (Anno L Henry 7) who (as confidently, and I believe truely maintaines, that, this disease was never till then knowne to be, much less to bee mortall) as if there were a concatenation of evils one evill seldome cometh alone. A Pestilence succeeded this former mortalitie, and so ragged the whole Winter season in most parts of the realme, that the King for feare of infection, attended by a few, was faine every day to remove his Court from one place to another." Godwyn, Francis (1630).

Fourth Epidemic in England

"Van de Augspurg ist der schweiss gangen in das Bayrlandt, von Bayren und Norgken, in Osterreich, Unger, Turchey, von occident bis gen orient alle landt durch, es sind vil leut hie aus der stat geflochen die zum tail daussen am schweiss gestorben sind." Martin, A. From Clemens Lendes (1529).

"*Sudor Anglicus est febris ephamera maligna, epidemica a rarefactione elastica lymphae vaporosae volatilis praeternaturali, sudore debito magis subiagabilis.*" Leupoldo Erdmanno (1597).

"Whereas it seized upon them with a violent heat, and incredible anxiety about their stomach and head, insatiable thirst, and the sweat which ensued was noisome and stinking. This appears not only out of Polydore Virgilio, and Hollinshead but such physicians as writ of it . . ." Stubbe, H.

Fifth Epidemic in England

"It (the pain or disease) appeared on some first upon the neck and shoulders, in others upon the legs and arms. Others felt as if a breeze or breath of air were blowing through their limbs. Suddenly these persons dripped with a great sweat without apparent reason, unaccustomed as they were to this disease. They first began to feel warm internally, after which they burned, the heat having spread already to the most extreme parts of their bodies. An enormous thirst developed and wild agitation. The disease attacked the heart the liver and the stomach. All this was followed by a heavy dull pain in the head, by insane raving and delirium, and after this langour and an unconquerable necessity for sleep. For the disease was as violent as the poison of noxious air, because the mind was seized with fury and overcome with torpor. Then came a violent death.

"On the other hand, the sweat stayed on from the beginning in other cases, their limbs chilled easily; and also a breaking out occurred, after the sweating had diminished slightly accompanied by a foul odor, and some color, producing moisture, which diminished at times and again was copious and of thick consistency. The patients breathed rapidly and heavily of necessity. Some showed nausea, some vomited, but only a very few and only those who had eaten heartily, and they spoke groaningly. The urine was touched with color, was of thick consistency, and

elimination was uncertain, (there was nothing regular in character on account of the violence of the poison). The pulse, when tested was rapid and fluttering. These were certain indications of the sickness." *Johannis Caii, "de Ephemera, Britannica Liber."*

"When care was not taken that the hands and feet were kept under the clothes they died, and their bodies became as black as a coal all over, and were covered with vesicles, and stunk so that it was necessary to bury them deep in the earth by reason of the stench." *Straphorst (from Hecker).*

1750.

"At length after about seven or eight days, when he has taken to his bed, by means of copious and profuse Sweats, the miliary eruptions before mentioned appear on the Temples, the Neck and Breast, and sometimes spread over the whole body.

"The little red Eruptions grow by Degrees to Maturity, acquire white Heads full of Matter, and then grow dry, and die away, which course in the more kindly sort is accomplished in seven Days.

"These greates and profuse Sweats, that precede the Miliary eruption are by no Means such as critically discharge the Putrifaction that causes the Disease.—

"A second Fever and Eruption, I likewise know often succeed the first.—

"This brings to my Mind the ease of a Female Patient, who, at my first Visit, I found drowning, if I may so say, in those Sweats." *Sir Richard Blackmore, M.D., 1750.*

Table of Cosmical Phenomena, Epizootics, Famines, and Pestilences in Ireland (census of Ireland, 1851).

The Great Mortality.

"There was much wet and unfavorable weather in the summer of this year and the ensuing year; it resembled a deluge, so that the corn crops of Ireland decayed." *Annals of the Four Masters (1491).*

"Some of the annals record the pestilence of the Plaigh Allais, or the Sweating Plague under the year 1492, but it is likely that the disease spread over both years [1491-2]." *Census*

1491. "This year was commonly called by the natives the Dismal Year, by reason of the continued fall of rain all the summer and autumn, which caused great scarcity of grain throughout all Ireland. About the latter end of December, after the appearance

of a blazing star, which shone for some days, a certain grievous and pestilential sickness, commonly called the 'English Sweat' (because it came from England into Ireland) began first to afflict this nation; which disease some of the physicians imagined to proceed from a certain malignity of the air, bred and caused by the often unhealthy mutations of the air." *Ware's Annals.*

"The summer and harvest were so wet in Ireland that the corn could not be saved, and therefore a great dearth ensued, which was accompanied by a disease-called the Sweating Sickness which now came to be first felt and known in Ireland." *Hibernica Anglicana.*

1492. "An unusual plague (*Plaigh iongnathach*) in Meath, i.e. a plague of twenty-four hours duration; and any one who survives it beyond that period, recovered. It did not attack infants or little children." *Annals of the Four Masters.*

"The Baron of Slane, the great Lord of the Fleming, that is James Fleming, died this year, on the 20th of the month of March, of the Sweating plague (*Plaigh Allais*) which had newly come into Errin at the time." *Annals of Ulster.*

"The Baron of Slane, James Fleming, died of a Sweating Plague." *Annals of Connaught.*

1528. "This year a certain grievous pestilential disease, commonly called the English Sweat, did overspread a great part of Ireland; Hugh Ingey, Archbishop of Dublin and Chancellor of Ireland died thereof, among others at Dublin on the third of August." *Ware's Annals.*

"A malignant disorder called the Sweating Sickness in Cork." *Smith's Cork.*

"A pestilential sickness, called the English sweat which first appeared in Ireland in 1491 now raged in Ireland with great violence, and at Dublin swept away Archbishop Inge, Lord Chancellor; William Talbot, Richard Elyat, Richard Fitzwilliam, Walter Fian, and two canons Luett, with Stanihurst and great numbers of other citizens." *Harn's Dublin.*

"The Sweating Sickness, called *Sudor Anglicus*, was fatal to many of the Irish this year." *Hibernica Anglicana.*

Roettingen Epidemic, 1802

Hot summer succeeded by incessant rain. "Strong vigorous young men were suddenly seized with unspeakable dread; the heart became agitated and beat violently against the ribs, a profuse, sour, ill smelling per-

spiration broke out over the whole body and at the same time they experienced a lacerating pain in the nape of the neck." Hecker.

Molwab Sweating Sickness

"They have been more decidedly of the character of a periodic remittent character, and often attended with a peculiar fetid perspiration, connected with a depraved condition of the blood. The perspiration was at the same time so profuse that it formed a prominent feature of the prevailing disease: which led me to think we have had to deal with the Sweating Sickness of Europe, and hence I have ventured to give it that name." Murray, I.

Prayer against the Sweating Sickness

"Non sudore,
Vel dolore
Moriatur subito."

Gent. Mag., 1786.

BIBLIOGRAPHY

- ALLIONIUS, C. *Tractatio de miliarum . . . et curatione. Augustae Taurinorum*, 1758.
- ARETAUS. *The Extant Works of*. (Trans. Francis Adams) Lond., 1856.
- AURELIANUS, COELIUS. *De Morbum Acutis*. Ed. nova. Welsteniana, 1722.
- Autopsy Report. *Oesterr. San-Wes. Wien*, 13: 495, 1901.
- Bacon's Essays and Historical Works: Henry VII, p. 313.
- BELLAI, P. T. *Coup d'oeil histoire . . . son traitement*. Paris, 1883.
- BENNS, E. *De sudore anglico. Edinburgi*, 1828.
- BONNESCUELLE DE LESPINOS. *Sur le cholera cutané ou sudoral. Montpellier*, 1866.
- BORCHARD, M. *Les fièvres sudatoires (febres helodes), suette, suette miliare, fièvre miliare sporadique et épidémique, certaines formes de fièvre puerperale, fièvre diaphoretique des auteurs*. Paris, 1856.
- BROEKK. *Notice sur Jaques Vandenkastelee*. Sept. 1529. *Ann. Soc. de méd. d'Anders*, 10: 353-377, 1849.
- BUSACCHI, A. *Un caso de febbre miliare. Bull. d. méd. di Bologna*, 98, 5: 372-378, 1917.
- CAIUS, J. *A Book or Counsel against the Disease commonly called the Sweat or Sweating Sickness*. 1552.
- De Ephemera*, Britannica Liber. 1552.
- CHANTMESSE, MARCHOUX, et HAURY. *La suette miliare et le rat des Champs. Bull. acad. de méd.* 38, 56: 293-299, 1906.
- CHANTMESSE, MARCHOUX, et HAURY. *Bull. méd.*, 20: 933-935, 1906.
- Chronicle of Calais. Richard Turpyn of Calais and Bourges. Trans. by J. G. Nichols, Camden Soc.
- Census of Ireland, 1851, Death Statistics, Table of Cosmical Phenomenon, Epizootics, Famines and Pestilences in Ireland.
- CLEMEN, O. *Sur Literature . . . Schweiss von 1529. Arch. f. Gesch. d. Med.*, 15: 85-97, 1923.
- CORDUS, ERICUS. *Eyn Regiment . . . darin halten sol. Marburg*, 1529.
- CREIGHTON. *Hist. of Epidemics in Great Britain*. 1891.
- CRÉPIN, R. *La maladie . . . la suette miliare. J. de santé*, 23: 465-467, 1906.
- CULLEN, D. Report on an outbreak of fever (miliary) at Leoni. *Indian Med. Gaz.*, 8: 197, 1873.
- Cure (The) of the miliary fever: to which is annexed advice to the apothecaries. By a subject of Mithridates, King of Pontus. London, 1751.
- Articles by Hamilton and Blackmore also in this book.
- DAREMBERG, CH. *Histoire des Sciences Médicales*. 1870, 1: 351.
- EBSTEIN. Note on Sweating Sickness. *Brit. M. J.*, 1: 782, 1900.
- EPPINGER, H. *Zur aetiologie des Miliaria. Oesterr. San. Wes.*, 13: 49-70, 1900.
- Encyclopedia Britannica*.
- ERDMANNO, LEOPOLD. *De sudore anglico. Jenae*, 1697.
- EVANS, E. W. Inquiry to Science regarding the Sweating Sickness.
- FAYOUX, J. *Suette miliare du Poitou 1845-47*. 134 pp. 22 pl. 1887.
- FOSTER, M. G. Sweating sickness in modern times. *Contrib. med. and biol. research. Sir Wm. Osler, N. Y.*, 1919, 1: 52-58.
- GERSTER, A. G. What was the sweating sickness of the 15th and 16th centuries? *Johns Hopkins Hosp. Bull.* 27: 332-337, 1916.
- GODWYN, FRANCIS. *Annals of England 1630*, 37, 115, 243.
- Grafton Chronicles of England, pp. 146-160.
- GRUNER, C. G. *Von der Englischen Schweiss-sucht—dahin gehörigen schriften. Med. Chir. Ztg. Salzburg 1802*, iv, 195-207.
- HAMILL, S. Mc. C. *Miliary Fever. Handb. Pract. Treat. Musser and Kelly, Phila. and Lond.* 1911, 11, 635-639.

- LE BLAYÉ, R. Notes hematologique sur la suette miliare. Bull. et mem. Soc. méd. d. hop. Paris. 1926, III, No. 33, 1551-1553.
La Suetie.
- HALL'S Chroniciles of England. Reigns of King Henry VII and Henry VIII.
- HAURY. L'épidemic . . . des Charentes. Rec. de méd., vol. 27, 1907.
- HÄSER, H. Aphoristische Bemerkungen . . . Ende des 15th zu Anfang des 16th Jahrhunderts. *Schmidts Jahrb.*, 20: 97-102, 1838.
- HECKER, J. C. Epidemics of the Middle Ages. 1859.
- HIRSCH. Handbook of Geographical and Historical Pathology, 1883.
- IMMERMAN, D. H. Der Schwiessfriessel. 1898.
- KEAER, H. Suetie Miliare. *Hôsp.-Tid. Koblenk.*, 61: 641-721, 1918.
- KONIG. Der Englische Schweiss. Wurtzburg, 1837.
- LAWRIE, J. A. Case of sweating sickness. *Monib. J. Med. Sc.*, 1846-7.
- MARTIN, A. Altes und . . . in Deutschland, 1529 und 1530. *Med. Klin.*, 11: 1249-1251, 1915.
- VON MARWAL, F. Der englische Schweiss . . . in Jahre 1529. Zurich, 1849.
- Memoirs of King Henry the VII (Edit. by J. Gairdner).
- MENIÈRE. Epidemic of sweating sickness. *Lond. M. & S. J.*, 1: 784-821, 1832.
- MÉZERAY. History of France. 1683. 2: 509.
- Miliary fever or the sweating sickness? *Lancet*, 2: 1374, 1906.
- MONTALANO, A. De morbo miliare, Livorno, 1850.
- MURRAY, J. On the Malwah sweating sickness. *Madras Q. J. M.*, 2: 77; 3: 80, 1840.
- Nelson's Loose Leaf Living Medicine.
- OUVRIEU. Relation d'une epidemie à suette miliare. *Gaz. d. hôp. de Lyon*, 7: 129-145, 1906.
- PALMER, A. B. Miliary fever. *Phys. & Surg.*, 2: 152-162, 1880.
- POTHÉT, R. Essai critique . . . suette miliare. Paris, 1901.
- PYROUX, A. L. Une petite . . . de suette miliare. *Rev. méd. de Normandie die Rouen*, 11: 167, 1910.
- RENAULT, J. Suetie miliare. *Nouv. traité de méd. (Roger)*. Par., 1922, 2: 330-348.
- ROUX, J. Du choléra cutané ou sudoral. *Union méd.*, 11: 533; 565; 577; 531, 1857.
- SHÜRR. De la miliare. Etudes historique et pathologiques. Strassburg, 1863.
- SHAW, A. B. Sudor anglicus. *Missouri Clin. Rec.*, 5: 35, 1874.
- Shropshire Archeological Trans., Vol. 8, 1885 (The Sweating Sickness of 1551).
- SPRENGEL, K. Histoire de Médecine. 2: 490-495, 1815.
- STEINACH, G. De Miliarum Morbo. Vindobanae. 1829.
- STOW. Chronicles of England. 1631.
- STUBBE, B. F. The Lord Bacon's Reply . . . Physick and Chymistry. London, 1671.
- TENON, L. La suette miliare. *Progrès med.*, 11: 977-982, 1920.
- TEMML, J. H. De sudore Anglicano. Berolini, 1820.
- THOINOT and RIBIÈRE. Suetie Miliare. 1912. (see Bernard Auché on Fièvre Eruptives.)
- TURNER, G. F. An account of a severe form of epidemic miliary fever which appeared at Fort Snelling, Upper Miss. in winter of 1843. *N. York J. M.*, 121: 24, 1848.
- VANDEKASTEEL J. Lettre sur l'épidemie de suette. Anvers, 1529.
- VERGILIO, POLYDOR. Polydori Vergilii Urbinate Anglica Historiae. 1570.
- WEBB, F. C. The sweating sickness in England. *J. Pub. Health*, 3: 155-124, 1857.
- WEBB, F. C. What was the cause of the sweating sickness? *Edinb. M. & S. J.*, 4: 464-469, 1808.
- WEICHELSEBAM, A. Zur path. und anat. des Schwiessfriessel, *Vorbandl. d. deutsch. path. Gesellsch.*, pp. 85-91, 1901.

THE EARLIEST SUGGESTION OF THE USE OF COCAINE FOR LOCAL ANESTHESIA

(MORÉNO Y MAIZ, 1868)

W. F. VON OETTINGEN, M.D., PH.D.

CLEVELAND, OHIO

IN 1868 Thomas Moréno y Maiz, ex-chirurgien-en-chef de l'armée de Pérou, published a monograph entitled "Recherches chimiques et physiologiques sur l'érythroxylon coca du Pérou et la cocaïne."¹

In the introduction he states:

Having noticed by my own observation that the Indians engaged in mining and traveling across the high plateaux of the Andes, always and everywhere chew coca leaves, I considered it a duty to study the physiologic actions of the drug.

As this appears to be the first systematic experimental study on the pharmacologic action of cocaine, a translation of certain passages may be of interest. He describes the preparation of the chew, "chique," as follows:

When an Indian gets ready to chew coca, he sits quietly in a secluded place, then introduces into his mouth, one after the other, the leaves which are to form the chique, taking care to separate with his teeth or lips the veins and stems which he discards. When he finds the chique sufficiently large and moist, he starts a new operation. By means of a sharply pointed stick, he takes a certain quantity of "llipta" which he carefully places in the center of the chique. This substance is a grayish powder which is prepared ordinarily by incineration of dry stems of different plants, such as chenopodium quinoa, and the stems of banana leaves. Several opinions have been expressed as to the role of the lipta. One affirms

that the lipta reduces the bitter taste of the coca, others that it stimulates the salivation.

According to Mr. Rossier² it has no other purpose than to prevent the dryness of the mouth. Dr. Weddell³ assumes that the addition of lipta helps to dissolve the active principle of the plant. With the latter view, also expressed by Dr. Demarle,⁴ the author is most inclined to agree.

Whatever may be thought of these opinions, the use of the lipta is universal with the Indians of Peru and Bolivia, and appears to be for them the most effective means of developing the aromatic taste characteristic of coca.

Even today, the question appears to be undecided whether the addition of lipta renders the taste more marked, whether it enhances the maceration of the leaves as assumed by Poulsson, or whether it actually promotes the liberation of cocaine. In the procedure of betel chewing, according to Lewin, the lime added to the mixture of betel leaves and areca nut develops a flavor from the latter which causes the desired pleasant taste and gives an aromatic odor to the breath.

Moréno y Maiz then describes the immediate effects which the chique produces in the mouth:

When it has remained for some time in the mouth, it causes abundant salivation which the inexperienced must expectorate on account of its bad taste, but to which one soon becomes accustomed. The Indians swallow their saliva and

keep the *chique* constantly in their mouth, even during sleep. The average duration of a *chique* is about two hours. The Indian renews it more frequently if he has to perform strenuous labor. *L'acullicar* (chewing) is therefore, as may be seen, a quite complicated procedure, and the first attempt does not yield the full enjoyment of the *coca* which comes with habituation. It is with this substance as with tobacco. Who, in fact, has not experienced the nausea, the vomiting, the fainting, and all the most unpleasant sensations which the tobacco produces in the novice? The same with *coca*, it is necessary that the mucous membranes of the mouth become accustomed to the prolonged contact with this substance. It is unfortunate that this operation of chewing is so long and tiresome and so little in accordance with our modern customs. This habit has made its use very difficult and I have not succeeded in having my patients use it. They are willing to do so only reluctantly, although the novitiate is far less disagreeable than that of tobacco.

In the following chapter, Maiz discusses the chemistry of cocaine, especially the isolation of the alkaloid which had been worked out some years previously by Niemann in Woehler's laboratory, and introduces a modification of the procedure used by the latter.

In discussing the physiologic properties of the drug, Maiz first quotes the existing literature which also offers some interesting points:

There are two established facts concerning the effects of chewing *coca*. Namely, that *coca* helps the miner in his hard work under an unfavorable climate and that it enables the Indian to perform amazingly long marches on scanty food.

He quotes the statements of Dr. H. Unanue of Lima, Stevenson, and

von Tschudy, that the Indians may undertake severe physical efforts for days without taking any food other than a few grains of corn and chewing *coca*. J. J. von Tschudy⁵ writes:

I can furnish an example of the astonishing ability with which the Indians can support fatigue without food other than *coca*. I employed a Cholo from Huasi, called Hatum Huamang, for doing some hard labor with the pick. During the whole time he was in my service, five days and five nights, he took no food and slept only two hours during the night. But every two or three and a half hours, he chewed regularly about a Spanish ounce (14 gm.) of *coca* leaves and kept his *chique* constantly in his mouth. I did not let him out of sight during the whole time. After the work was finished, he accompanied me on a trip of twenty-three miles across the mountains, and although on foot, he followed the step of my mule and stopped only to prepare his *chique*. When leaving me, he declared that he was willing to do the same work over again, without eating, provided I should give him a sufficient quantity of *coca*. The priest of the village assured me that this man was sixty-two years of age and that he had never been sick.

Maiz then continues:

After having quoted the testimonial of such respectable men on the remarkable action of *coca*, I may cite my own experience. I shall report here what happens in my country every day; what happened to myself when traveling in different sections of the country, across the Cordilleras or in the Transandine Punas or Pampas.

The traveler is constantly accompanied by an Indian (*guia*) who has orders from the Administration of the Mail to return the mount to the point of its departure. This Indian voluntarily carries the baggage or hunting gun of his traveling companion in order to reduce the

burden of the horse. Sometimes the temperature is very low, and often one crosses regions where the ground is covered with a heavy blanket of snow. The scantily clad Indian who has nothing but his bag of coca (hualki) keeps step with the animal. He may go on so for days and nights without other food than some grains of parched corn. Arrived at the station, the Indian usually rests only for the time necessary to unsaddle the horse and then immediately returns the way which he came. If it is necessary to pass the night, he watches in the solitude while the animal grazes and early in the morning he again starts his journey.

For these reasons, Dr. Unanue regards coca as an excellent tonic; Dr. Weddell considers it a stimulant of slow and lasting action differing in this respect from alcohol. Dr. Montegazza⁶ believed it to be a nerve nutrient. Rossier thought that large doses of coca produced a particular narcotic action, this opinion was shared by Poeppig⁷ and von Tschudy.

Attempts of Gosse⁸ and Demarle to study this peculiar action of coca had given no clear-cut results, and, therefore, Maiz undertook an analysis of its action. But first he describes the sensation following the consumption of coca infusions, quoting the older observers and some of his own experiences. These phenomena do not differ essentially from those which have been often described as characteristic of the cocaine debauch and need not be quoted.

In order to determine whether cocaine really reduces the need for food, Maiz performed a series of experiments with finches and rats, and found that the administration of coca did not postpone death from starvation in these animals; indeed the cocaine animals died sooner than

the controls. He found these results in agreement with a report of Weddell whom he quotes as follows:

The Indians who accompanied me on my voyage and chewed coca during the whole day, filled their stomach in the evening like hungry people, and I can testify that they sometimes ate as much food during a single meal as I would have eaten during two days.

When one sees that the Indian is able to endure fasting for some days under the influence of coca, it should not be attributed merely to the drug; it should not be forgotten that the Indian race is strong and accustomed to privation from youth. The Indian is temperate by nature and necessity, it is therefore not astonishing that he easily endures fatigues to which the city dweller would succumb. Do we not also see that the Arabs, Negroes, and the Chinese coolies endure hunger for long hours, even for several days, and frequently in an unhealthy climate? One sees therefore that coca may appease for some time the sensation of hunger, but that it is unable to satisfy it completely. The truth of this opinion appears to be perfectly proven by the experiments which I have carried on. Indeed we have seen that in birds and mammals fed with coca, death was not retarded, and even that the loss of weight continued with a diet to which the animal was accustomed. We believe that we may also conclude from these experiments that if coca maintains energy, this means that it permits man to forget hunger; it is, however, not nutrient and it is unable to satisfy hunger.

After having established that coca does not contain a nerve nutrient as assumed by some travelers, Maiz performs a series of experiments in order to study the effect on the peripheral and central nervous system, following the general procedure devel-

oped by Claude Bernard in his classical experiments on the action of curare.

Some of his protocols are given in the following:

Exp. 4. 0.045 gm. cocaine acetate in the left thigh of a healthy frog.

After three minutes: does not jump, but only moves in place.

After fifteen minutes: the frog does not move, the respiration is slow, the heart rate is reduced to sixteen per minute, the pupils are dilated, the extended feet are not withdrawn. *At this moment stimulation does not cause the least movement.* One foot is burned without causing the least reaction. The sciatic nerves are now isolated and brought in contact with a Pulvermacher electrode. Under the influence of the electric current, the legs *contract vigorously*, therefore the sensation is completely abolished, while the motility persists.

Exp. 5. We take an adult healthy guinea pig; we inject into the right side four syringes of the same solution, 1:40 (0.05-0.06 gm.), and at the end of thirty-five minutes, this dose having been ineffective, we make another injection of 0.03 gm. But this dose is hardly injected when a notable change takes place. The animal makes efforts to escape when released, but does not succeed, at best it makes a few staggering steps. At this moment it turns to its side and falls into violent tetanic convulsions with all four legs; the jaws also show convulsive twitchings. Placed on the back, it cannot turn over, placed on its feet, it cannot maintain itself and falls immediately on its left side and rolls several times completely around from the right to the left, trying to get on its feet. The slightest excitation, the slightest noise in the neighborhood, tapping on the floor where it lies, and so on, renew the convulsions. From time to time the head is thrown back, the body is bent in the form of an arc (opisthotonus) and its forelegs are ex-

tended as if tetanized. This condition lasts one hour. At the end of this time, the convulsions decrease gradually and are replaced by trembling. A little later the animal manages with much effort to get on its feet, it appears intoxicated and shows for some time a distinct weakness. At the end of the second hour, the guinea pig has completely returned to its normal condition.

This experiment and similarly many others which we could quote, especially with rats, show violent excitation, paralysis of the right side (injected side) and movements resembling the turning of sheep during the disease which is called "staggers."

Exp. 6. Frog injected with six drops of cocaine acetate solution in fractional doses, every hour until 15-16 mg. are administered. After the animal has developed all the symptoms which characterize the action of cocaine in small doses, it shows a few minutes after the last injection all the symptoms of a typical tetanus, stiffness of the whole body, opisthotonus, veritable tetanic attacks (each lasting thirty to sixty seconds) spontaneously or caused by stimulation, etc. This condition lasts for fourteen hours, then the frog gradually returns to its normal condition, and twenty-four hours later it is perfectly normal.

We believe that it is permissible to form an idea on the mode of action of cocaine on the function of the nervous system on the basis of the experiments reported above. We saw that the first effects of cocaine acetate were manifested by muscular excitement, and later by increase of excitability; this first period, which is generally of short duration, is followed by muscular depression, decreased sensitivity and finally, if the dose is large, further diminution, and at last complete loss of sensitivity. It is a strange fact and appears to us worthy of attention that while the motor action is the first to be depressed, it is never destroyed; while the sensitivity which is affected later is paralyzed rapidly.

Following these experiments we shall report some which we may call check-experiments and which are the proof of the analysis of the first.

We shall first quote those which are planned to exclude one limb from the action of the injected substance by separating it from the organism, in the well-known experiments so successfully employed by Claude Bernard for the study of the action of curare, namely, the ligation of the arteries of one limb.

Exp. 9. Ligation of the left iliac artery; injection of 0.04 gm. of cocaine acetate in the right thigh. Ten minutes later the frog withdraws its hind legs rapidly, but they are shaken by a convulsive tremor and from time to time the frog withdraws them vigorously. Twenty minutes later the right (poisoned) foot, when extended, is not withdrawn; the strongest stimulation of this foot does not cause any movements of the same nor of the other legs. The left (isolated) foot is withdrawn when stimulated. The motility is therefore reduced, but stimulation of the foot causes *movements in the other legs*, which proves that the motility is diminished in the poisoned foot and that the *sensitivity is completely abolished*. It is the sensitivity and not the spinal cord which is affected, because the stimulation of the unpoisoned foot is transmitted to the other foot and causes reactive movements, and, moreover, because stimulation of the forefeet causes retraction of the left hind foot (unpoisoned) and some movements in the right hind foot. After one hour the frog is in the same condition, but at this time pinching of the nose causes movements in both hind legs. The same holds true for the left (unpoisoned) foot, while pinching of the right is not followed by a reaction. After one and a half hours the frog dies. At autopsy stimulation of the exposed spinal cord causes vigorous contractions of the limbs.

These series of experiments have enabled us to demonstrate, aside from the experiences already obtained in the pre-

ceding experiments (influence of the dose) that the nerves were affected and not the conductivity of the spinal cord.

Here follows another experiment in support of this:

Exp. 10. The heart of a lively and healthy frog is ligated at its base. Six drops of cocaine acetate (same solution) are injected into the left calf. After fifteen minutes the frog spontaneously extends the left (poisoned) foot; when this foot is extended, it does not withdraw it upon the strongest stimulation, but if one pinches the right (unpoisoned foot), the frog withdraws the left foot. After twenty minutes the motility of the left foot becomes weaker, since pinching of the other, causes only partial contraction in it. After thirty minutes the left foot is still insensitive, for it is not withdrawn upon stimulation, but it is observed that the skin of the thigh of the same leg still maintains its sensitivity (which holds true when the injection has been made into the calf).

In order to verify this fact we injected two drops of the same solution of cocaine acetate into the thigh; this thigh became also insensitive.

After two and a quarter hours, stimulation of the exposed sciatic nerve with the Pulvermacher electrode causes contraction of the muscles. A few minutes later the frog appears to be dead.

In the last frog, the spinal cord of which was completely intact, we have seen, nevertheless, that the sensitivity completely disappeared in the injected limb. It is therefore the peripheral sensitivity which is affected by cocaine acetate. Furthermore the local action of this substance is very marked.

Could one utilize it as a local anesthetic? One cannot make a decision on the basis of such a limited number of experiments; it must be decided by the future.

We believe that these last experiments are sufficient to control and to confirm the conclusions which we have formulated in the foregoing.

What follows from the total of the experiments which we have performed is that the action of cocaine is very complex.

(1) It causes phenomena which bring it close to strychnine (tetanic convulsions, spontaneous and upon the slightest stimulation, and death of the animals). (2) In small doses, cocaine causes a marked stimulation of the excitability, dilatation of the pupils, diminution of the movements; the animals appear to have lost the faculty of coordinating the movements; finally, with the largest dose, reduction then abolition of the sensitivity without the motility being completely abolished. In all instances, the pupils remain dilated.

These conclusions can, however, not be final, as already stated. This is a problem which requires longer and more complete investigations which we intend to continue. For the present, we limit ourselves to publishing what we have seen, happy if we can direct the interest of the observers to coca, which may become tomorrow an evident benefaction for all the world and a new source of riches for our country.

The most significant passage of the little treatise is the foot note which we have quoted, and which in a sense is prophetic of the whole subsequent development of local anesthesia, although it was neglected at the

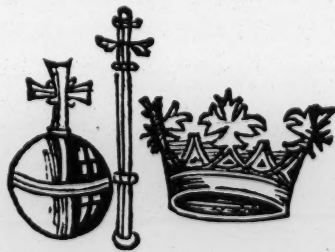
time by a world which was not ready yet for the thought:

"Could one utilize it as a local anesthetic? . . . The future will show."

The future has shown: Cocaine became the evident benefaction of all the world; the altruistic wish of Moréno y Maiz has been fulfilled.

REFERENCES

1. MORÉNO Y MAIZ, T. Recherches chimique et physiologiques sur l'erythroxyton coca du Pérou et la cocaine. Paris, Louis Leclerc, 1868. The monograph is in the Surgeon-General's Library in Washington, D.C.
2. Sur l'action physiologique des feuilles de coca. Par le Dr. Durossier de Verrey (en Suisse), 1861.
3. WEDDELL. Notice sur la coca, sa culture, sa préparation, son emploi et ses propriétés. Dans les mémoires de la société impériale de l'agriculture, première partie, 1853.
4. DEMARLE. Essai sur la coca de Pérou. Thèse de Paris, 1862.
5. VON TSCHUDY, J. J., Reiseskizzen aus Peru in den Jahren 1838-42. St. Gallen, 1846, 2: 299.
6. MONTAGAZZA, P. Ymportancia dietetica y medicinal de la coca. *El Comercio Journal de Salta*, Jan. 14, 1857.
7. POEPPIG, E. Reise in Chile, Peru, und auf dem Amazonenstrom während der Jahre, 1827-32. Leipzig, 1836, 2: 209.
8. GOSSE, L. A. Monographie de l'erythroxyton Coca. Bruxelles, 1862.



AN INTRODUCTION TO THE HISTORY OF WOMEN IN MEDICINE*

I. MEDICAL WOMEN BEFORE CHRISTIANITY (Continued)*

By KATE CAMPBELL HURD-MEAD, M.D.

HADDAM, CONN.

THE MEDICAL WOMEN OF ROME AND ITALY

Turning from Greece with its many medical women, anthropomorphic goddesses, famous artists and writers, great mathematicians and philosophers, to Rome and the Etruscans, we find that there were few notably educated medical men or women in Italy before Corinth was taken in 146 B.C., when the Greeks fell into the hands of the Romans who carried back to their homes as slaves many skilful men and women doctors.

We recall that one of the reasons for condemning Socrates to death was for teaching his pupils that there were too many gods in the Greek Pantheon. This in the eyes of the Romans would have been no crime, for polytheism prevailed among them to a greater extent than even in Assyria or Egypt. Sir Flinders Petrie has said that civilization everywhere is an intermittent phenomenon. The Romans of 50 B.C. were no more learned than the Greeks of 500 B.C., and they were naturally irresponsible and changeable, both in their religion and in their politics, so that by 500 A.D. they were as completely assimilated by the Goths as they themselves had assimilated the Greeks. The Persians held out a trifle longer, but in the seventh century A.D. they adopted in the main the ways and religion of the conquering Mohammedans.

In the great poems of Homer, as we have seen, women played a considerable part as healers of disease, and in the fourth century B.C., we found such women as Aspasia and Artemisia standing out as types of the learning and morality of their times, for at least there was not a double standard of so-called morality then. Two hundred years later both sexes degenerated rapidly and became weak physically, and were mentally quite unable to follow up any new medical interests. Polytheism then developed to such an extent that even the Greeks in Rome were ready to adopt any number of new gods, one for every symptom of each disease.¹ The gods were named according to the diseases they healed. There was Scabies, Genitamana, Nascia, Fecunditas, Angitia or Angina, or Angerona, who was the goddess of silence and of laryngitis,² mentioned by Macrobius, Flaccus, and Pliny as the goddess of pain and sore throat, and skilled in using poisons and antidotes.³ It was said

¹ Jayne, W. A., *The Healing Gods of Ancient Civilization* (1925).

² Theodocius Macrobius. *Saturnalia*, Lib. 1. Cap. x, p. 160.

³ Harless, C. F. *Die Verdienste der Frauen um Naturwissenschaft und Heilkunde* (1830), pp. 90-91.

Tiraquellus also quotes from Macrobius and Flaccus as to the ability of Angitia and Angerona. He says that the Romans gave the name angina to sorethroat because of the

* To be completed in six parts. Preceding Sections appeared in the January, 1933, issue, p. 1 and March, 1933, issue, p. 171.

to be Fecunditas who delivered Agrippina when Nero was born, although Venus and Diana were supposed to be



FIG. 22. ETRUSCAN MAN AND WIFE. FROM A TOMB.

present as well as the great queen of the gods, Juno herself.

At Lake Nemi the supreme goddess was Diana, one of whose specialties was to treat all diseases of women. Almost countless clay models of the uterus have been found near her shrine, together with the torch, the symbol of midwives and of the Mater Matuta who in the early hours of the morning opened the uterus and bade the baby come forth. More than two hundred years before the coming of the Greeks there was an altar to the Matuta in the Forum Boarium, in Rome, as well as other temples and shrines to her along the sea coast in the Etruscan cities.

Bona Dea was the symbol of fertility, health and longevity. Her temple on the Aventine hill contained a cave filled with herbs to cure sterility, and it was also the abode of sacred snakes. Pigs and money were offered at her shrine as at the temple of Demeter in Eleusis. Women were the only physi-

cians allowed in her sacred precincts as healers of diseases of women.

Feronia and Fortuna¹ were two other important goddesses with medical attributes to whom numerous temples were built. The temple to Fortuna, at Tivoli, still stands on a high terrace above the waterfalls, a beautiful monument to the artistic talents of the Roman architects. She was the divinity of all young girls who desired babies, and her name was generally coupled with that of Hygeia. Salus, or Safety-first, was considered a colleague of Hygeia, and during the plague Salus and Hygeia were helped in their work by Apollo and Asclepius or Esculapius. A statue to Salus stood in the temple of Concord in the Roman Forum where she was busily worshipped, and her own temple stood on the Quirinal hill.

Carna, another goddess, had charge of both male and female internal organs. In her honor the devotees ate bean gruel and bacon one day in the year in order to insure good digestion for the rest of the year.

Cloacina and Febris were the two important gods of fevers. The special season of Cloacina was in February when marriages were not allowed because the Dis Manes of departed spirits were especially active sending diseases to people and keeping Cloacina busy. Febris was the goddess of malarial fevers and of the Roman marshes, and evidently quite unable to cope with her business as the population of Rome and the Campagna increased. To her there were three temples on the hills of Rome to which patients were taken to be purified by a severe diet and bitter herbs.

skill of the goddess who was originally a woman. Vergil, *Aeneid*, I, 83, speaks of her skill and says that she was a priestess.

¹ Fowler, W. W. *Roman Festivals of the Period of the Republic* (1899).

The Greek Minerva, however, was the great medical goddess as well as warrior. A temple in her honor was built on nearly every hill in Rome, and her altar stood next to that of Jupiter himself on the Capitoline. Without her favor not one man of the Legion would start for Gaul, and many altars were erected to her as well as to Mars in far-away England. Even Cicero praised her skill and said if any one applied to her he would need no other doctor, but he also added, "I believe that those who recover from illness are more indebted to the care of Hippocrates than to the power of Asclepias." His own physician was Asclepiades, a Greek (born 124 B.C.), whom we shall discuss later. (*De Natura Deorum*, III, 38)

Fabulla and Foquetia are almost as common names among the fabled healers of Rome as some of our names of saints today. Suidas, Eusebius, and Octavius Horatianus quoted them with respect. Fabulla was called by Galen "Lybica" and by Cornarius, "Livia," as if she were a living medical woman in their time. (See Baas, p. 134.)¹

Vergil gives us many a hint of the state of medicine during his life. For instance, when Aeneas was wounded by an arrow, Venus told Iapis to remove the arrow and wash the wound and heal it with the dictamnus plant.

Hic Venus, indigno nati concussa dolore,
Dictamnium genetrix Cretaea carpit ab Ida.
(*Aeneid* XII, lines 411-412)

Ovid, also, knew all the healing gods and he especially praised Anna Perenna, "Dido's sister," one of the celestial medical faculty.

¹Lanciani, R. Pagan and Christian Rome (1893), pp. 54, 60, 73.

There were altars not only "to the unknown god" of whom St. Paul spoke on Mars' Hill, but to others,



FIG. 23. VOTIVE OFFERINGS TO A GODDESS FOR THE CURE OF DISEASE.

"si deus si dea," or "Genio urbis Romae sive mas sive femina."¹ To Venus Genetrix, however, were given the most costly presents. Julius Caesar presented to her six collections of cameos, rare paintings, beautiful statuary, and finely cut gems, all of which were kept in her temple as in a museum.

Isis and Bubastis, Egyptian goddesses of healing, were worshipped at Lake Nemi along with Diana, and in the ruins of their temples were found diadems, gold cups and plates, necklaces and other jewelry, draperies of heavy silk loaded with gems, vases, water jugs, and silver effigies of the goddesses. Lanciani speaks of the medical offerings to Diana at Nemi which were so numerous as to prove its great importance as a hydrotherapeutic center. Some of the ex-votos represent young mothers nursing their babies, some are surgical breasts like those found at the temple of Esculapius on the Island in the Tiber, and many of the treasures found at both these places seem to show that there were near-by shops

¹Lanciani, pp. 72-73.

manufacturing them for the pilgrims. The shrine of Minerva, on the Esquiline hill, has been a mine of such trinkets, among them certain amusing ones like a head with bald spots presented by Tullia Superiana, with the legend, "Restitutione sibi facta capillorum." At Veii, of the Etruscans, votive offerings accumulated so fast that from time to time the old presents were thrown down the hillside, a cliff 198 feet high where, in the course of ages they formed a slope reaching nearly to the top of the cliff. These votive offerings were models of every part of the human body, outside or inside.¹

But, on the other hand, there were many Romans in those early days who, when in pain, trusted more in their mothers and grandmothers than in the gods. Cato said that the average family had a good supply of home remedies. Cabbage was a great favorite; its leaves made poultices, its juice mixed with honey healed fistulas and sores, and a tea of cabbage was used for debility. Pliny, as we shall see later, praised the homegrown herbs and theriac.

Lucretius, in his *De rerum natura*, 60 B.C., thundering against the old gods of Greece, asserted confidently that the world is composed of indestructible atoms and that no treatment of disease even by gods could change the fate of mortals. But, curiously enough, neither he nor Cicero mentioned any organs below the belt in their description of bodily infirmities. Caesar imbibed somewhat of the Hippocratic spirit and more than half believed in the prevention of disease, but though he felt that something in the marshes caused malaria he could not convince the Romans that they should tax

themselves in order to drain off the water, for, they reasoned, if Esculapius had willed that malaria should not be cured it would be folly to try to cure it. A little later, in the time of Augustus, the Sibylline Oracle told the Romans that as the Greeks had brought malaria, so to the Greek temples of Esculapius the Romans must go to get the sacred snakes and build temples to the Greek god wherever the snakes chose to live. And so it happened that after the battle of Actium, 31 B.C., when the Romans were bringing home the trophies of war and of plunder, they also brought a number of yellow snakes which slyly escaped from the boat while passing the island in the Tiber and there quickly hid in a cave. Taking this as an omen the Romans built a temple to Esculapius above the cave and there carried on all the practices of the old Greeks, the incubation sleep, the sacrifices, the amusements, and they erected votive tablets telling of their cures, and presented to the god models of livers and abdominal organs, etc., etc., many of which are now in the archeological museums of the world. (See Fig. 24.) This temple was used as a refuge for sick slaves who, if they did not die, were freed when cured. Often the cures were as sudden as at Lourdes today, and sometimes a sloughing wound was healed the minute the ashes from the altar touched it, while a diet of pine cones or nuts succeeded miraculously in stopping hemoptysis and curing a wasting cough. The temple sleep was, however, the important part of the cure, as even today in the island of Tenos, where a picture of the Virgin, said to have been painted by St. Luke, still works miracles of healing.

¹ *Ibid*, p. 66.

Before the conquest of Corinth by the Romans, in 146 B.C., there had been little scientific medical work in or in Spain before 200 B.C. About that time we find Plautus and Terence mentioning Roman midwives in a



FIG. 24. VOTIVE OFFERINGS.

what is now Italy or her provinces. Spain was even more remote from the culture of Greece, as we may see from the statues and busts and votive offerings found in Spain dating from the days when the Carthaginians and the Greeks were merely the traders with the Iberians before the persistent invasions, conquests and settlements of the Romans. The Greek influence is shown much more in Sicily, where there were larger Greek colonies than in any part of Spain until after the Roman conquest, although then it was that the art, architecture, philosophy and science of the Greeks profoundly moulded Spanish thought and studies.

We know very little of the medical conditions either in Etruscan Italy

disparaging sort of way and making allusions to their habits of imbibing too freely of strong wines. About one hundred and fifty years later Ovid also made them a butt of his ridicule. He shows us a mental picture of the midwives of his time in despair over a slow labor and shouting four to seven times with loud and louder voice to the goddess Diana for help and haste while all the people in the house sit with crossed legs and twisted fingers until labor is eventually terminated. Doubtless there were midwives of that kind, but with the advent of the Greek slaves after the taking of Corinth, especially of the well-trained midwives and educated women doctors, conditions began to be greatly improved in Italy at least.

It was a very long time, however, before the Romans modified some of their old barbaric practices as to the



FIG. 25. IBERIAN QUEEN IN EARLY SPAIN.

acceptance of the new-born baby by its father. If he denied that the child was his it might be left to die, or thrown, like Romulus and Remus, to the wild beasts or serpents. If the father did claim the child he named it on the ninth day and registered it at the Treasury on the eleventh. The wishes of the mother were scarcely taken into account until long after the Greek culture had become fashionable, and Greek women doctors were the family physicians of the masses.

The nearer we come to the time of Christ, however, the more medical activity we find in pagan Rome.¹

¹ A few dates may save the reader some research: Vergil, 70-19 B.C.; Augustus, 63-14 B.C.; Julius Caesar, 102-44 B.C.; Cicero died, 43 B.C.; Musa was the physician to Vergil and Augustus and Horace. Asclepiades was physician to Cicero, born 124 B.C. Themison of Laodicea, fl. 50 B.C., and Heraclides of

During the reigns of Julius Caesar, Augustus, and Tiberius there were many medical women practicing in Rome. They were called *Medicae*, *Obstetricae*, and *Sagae*; and while Cato classed all medical practitioners with mountebanks and robbers, women doctors were also often classed with abortionists and poisoners. There probably was at that time a lower standard in medicine at Rome than in Greece, for the Roman schools had never equalled the Greek schools.

During the first century B.C., women did all the obstetric work in Italy and the Roman provinces. They usually made their visits in chairs borne on the shoulders of stalwart men who jostled one another noisily in the narrow streets, so narrow that it was necessary to turn into a side street to let a chariot or heavily laden donkey-cart pass. Slops of all kinds were thrown into the streets to add to the filth in the gutters which eventually poured into the great cloaca, and thence into the Tiber. One can see such muddy lanes today in many of the small towns on the hills above the Roman Campagna, where the old stone houses in winter are as cold as the grave and the people sit out of doors in the *bel sole* to get warm.

The age of Augustus that produced a wealth of famous men and had many devotees to agriculture as well as to medicine, has been called the "Golden Age of Rome." Both Varro and Vergil wrote books for the farmer as well as for the nobility. Livy and Strabo and Sallust wrote geographical treatises,

Tarentum fl. 75 B.C., were both famous physicians at that time.

The Julian calendar held its own from 45 B.C. to 1582 A.D. in the Church of Rome, and until 1752 in England, and it was in force in Russia even into the 19th century.

tises, while Philaethes was writing a book on the diseases of children, and Celsus, Scribonius Largus and

erased and used again for another subject. Celsus, at the time of Tiberius, said somewhere that he could find



FIG. 26. THE WOMEN OF THE CAESARS.

Musa were writing on general medicine. Sarton (p. 221) says that it was a time of application to old theories, however, not of scientific creation. New medical schools were opening in every direction, one of them having been founded privately by Cicero's physician, Asclepiades, in 50 B.C. This eventually became the *Schola medicorum* of Rome in the time of Celsus, 14 A.D., and then, having become a government school in the time of Vespasian, it lasted until the time of Theodoric the Great, 526 A.D. The teaching was mainly in Greek, but its books were in Latin as were those of the Alexandrian school.

Since Antonius Musa was the physician to Vergil and to Augustus in this brilliant age we should give him a little space here, for he evidently was a type of the then popular physician, although about fifty years later very few of his writings were remembered and by the time of Galen only two small booklets were in existence. This was no unusual thing when libraries were scattered by fire, or books lost carelessly, or pages of manuscript

no books of seventy-two authors known to him through history, and of Varro's 620 books only one volume and a half remain today. One of Musa's works was dedicated to his wealthy patient Maecenas, a book on diet, baths, and the necessity of fasting according to the quarter of the moon. Maecenas was a hearty eater, and Musa must have felt that he was in danger of dying from a condition called *strictum*, perhaps what we call arteriosclerosis. He treated his patients according to the color of the urine, gave them nauseating medicines or an herb like betony which he used for forty-seven diseases including broken heads, sore eyes, pain in the bladder, bites of dogs, and pains of labor, although he ordered cold baths for Augustus and thereby cured him of many of his symptoms of stomach trouble. Vergil¹ said that Musa was in love with his profession, beloved of his patients, popular with

¹ Crawford, R. Antonius Musa. Contributions to Medical and Biological Research dedicated to Sir William Osler. N. Y., Hoeber, 1919, 1: 24.

the rich as well as with the poor, knowing all drugs, but depending on very few. It is pleasant to think of the gatherings of these noted men at the villa of Maecenas on the Esquiline Hill, or at Horace's farm in the Sabine hills, or on the Palatine Hill at the great palace of the emperor, walking and talking with Vergil, or stopping to say a prayer at the altar of Esculapius in the Forum, near which Augustus erected a statue to Musa himself in gratitude for his own cure. The wife of Augustus, Livia, as we shall soon see, had studied medicine, and many of the women of the royal family were skilled in the practice of certain schools and went about among the sick slaves in their private hospitals, such as those of Maecenas and Livia and Augusta. We cannot fail, however, to sympathize with Horace in the pangs of dyspepsia, and Maecenas in a fit of gout, and Augustus worried over his pimply face, and Vergil with his consumptive cough from which all his relatives died, although he actually died of sunstroke at the age of fifty-one.

One of the great medical writers of the time of Augustus and his immediate successors was Celsus, who "flourished," as Sarton says, under Tiberius, i.e. from 14 to 37 A.D. He was a literary aristocrat, not a medical practitioner, and though his work was an encyclopedia of all knowledge, following those of Cato and Varro, it was the most complete medical work after that of Hippocrates.¹ He belonged to none of the so-called schools of medicine of his time, neither that of the Methodists (pronounced with long o) nor of the Empyricists, nor yet that of his contemporary Themison, who paid no

attention to the symptoms of disease, believing that all diseases had one and the same cause. The Asclepiadists were Methodists, believing in a condition of strictum and laxum, or of tenseness and looseness, of high or low blood pressure. Soranus of Ephesus was an exponent of these theories, while Themison was a go-between, believing also somewhat of the theories of the Empiricists, or experimenters and students of poison, and thus incurring the sarcasm of Martial, who asks in a stinging epigram how many patients Themison has killed in a year. Celsus, however, wrote for all sects. He was a great friend of Horace, the poet (who died 8 B.C.), and it is said that they spent many a quiet hour together in the library of Augustus, on the Palatine Hill. Later, in the time of Tiberius, Juvenal made one of the group of literati, giving us glimpses of the medical practice as he saw it, and dilating on the vices and the general immorality of the time.¹ Juvenal tells us of the immoderate bleeding and cupping, the large doses of aconite for quartan fever, and many other remedies from the point of view of a layman, but Celsus says that all the good doctors were doing their best to cure patients both by surgery and by palatable drugs. Celsus was a friend to the women doctors of Rome and he gives us a picture of them in their busy practice as they went about with pleasant tasting remedies tucked into their pockets or bag, followed by slaves carrying their instruments, and the latest book of Thessalus, on Methodic treatment, under one arm. The slaves

¹ Cordell, E. F. The medicine and doctors of Juvenal. *Johns Hopkins Hosp. Bull.*, p. 283, 1903.

Horace and Medicine. *Ibid.*, p. 233, 1901.

¹ Sarton, op. cit. p. 240.

colle
leech
juice
patie
their
kniv
poly
like
movi
from
drill
tena
need
mixin
drug
instr
peii
H
doct
cent
iatri
main
(p.
saga
the
they
ever
We
of p
prob
bad
Aur
hath
and
gene
som
quac
abou
libra
later
dest
migh
wom
acce

¹ F
um N
p. 12

collected the flasks of urine, applied leeches to the stricti, or gave poppy-juice to the laxati, and held the patients during operations. Among their instruments were bronze handled knives with steel blades, a pair of polypus forceps with ivory handles like dolphins, instruments for removing arrow tips and lance heads from wounds, a bone elevator and a drill bow for trephining the skull, tenacula, catheters, curets, spatulas, needle holders and needles, slabs for mixing ointments, scales for weighing drugs, cupping vessels, and other instruments like those found in Pompeii and the buried cities of this time.

Harless¹ speaks of the Greek women doctors in Rome during the first two centuries of the Christian era, as *iatrinai* or *medicae*. He says they were mainly Empiricists and midwives. Baas (p. 117) says that the *medicae* and *sagae* were the worst sinners against the Hippocratic law, and adds that they were often prostitutes who used every method for producing abortion. We can only add that on the theory of probabilities most of them were probably rather good and honest than bad practitioners, for, as Marcus Aurelius said, "the wheel of the world hath always the same motion, upward and downward from generation to generation," and although we know something of the mountebanks and quacks, we also do know something about the good physicians. If no libraries had been lost, or burned by later censors, and no manuscripts destroyed by editors or copyists, there might be a very different story as to women doctors from that occasionally accepted by German scholars. At any

rate, there was a great temptation to study medicine, since doctors were exempt from taxation but the good *iatrinai* had to compete with all sorts of blatant quacks. There was Thesalus, as an example of a teacher of medicine who boasted that he "finished" his pupils in six months no matter what their previous learning might have been. His graduates usually became examiners of the gladiators. Cato, Juvenal, and Martial all tell the story of one quack who talked to his dupes through the mouth of a snake, and another who wrote his messages on a sealed slate. These men had enigmatical signs over their doors such as, "Phoebus unshown dispels the demon of disease."

Neuburger, on the other hand,¹ tells us that the training of the women doctors and obstetricians was often very good. They attended classes at the best Greek schools where the professors were well paid, and they studied surgery as well as general medicine, and had practical experience in obstetrics before taking cases of their own.²

Soranus of Ephesus (98-138 A.D.) wrote a book on obstetrics and gynecology for the women students of his day in which he says that the obstetrix must know how to read and write,³ must be free from superstitions, have good sight and hearing, sharp intellect, strong arms and legs, soft hands, and long, thin fingers with short and clean nails, must understand anatomy, hygiene, therapeutics, the normal as well as abnormal conditions of the

¹ Neuburger, M. *Geschichte der Medizin* (1911), p. 281.

² Von Siebold. *Geschichte der Geburtshilfe* (1901) p. 173.

³ H. Lüneburg, und Huber, J. C. Transl. *Die Gynäkologie des Soranus von Ephesus* (1894).

¹ Harless, C. F. *Die Verdienste der Frauen um Naturwissenschaft und Heilkunde* (1930), p. 120.

body, must love her work, keep secrets honorably, and have had considerable experience before undertaking to care for patients alone. Soranus continues, "That midwife is the most capable who knows the whole realm of therapy, dietetics, surgery, pharmacy, and who can give good advice, is not worried by sudden complications and is prepared to save her patient's life if possible, for she will often be called to visit the seriously sick." He adds that she need not have had children of her own in order to care for a woman in labor, nor should she be very young (not under twenty years of age nor over forty). Her knowledge of anatomy of the hidden organs should equal that of those that can be seen. She should know how to perform version, but she should never harm a patient. Soranus makes a distinction between women doctors and nurses¹ (p. 64), and he says that a wet-nurse should have had three or four children of her own, must be healthy and have firm breasts. During difficult labor a midwife should have three assistant nurses to encourage the patient, rub her abdomen, be ready to receive the new baby, rub it with salt, bathe it, but never nurse it until her body has become cool and rested, and she must always throw away the first drops of her milk lest they should have been overheated. He condemns the custom of the Greeks and Scythians of plunging the new baby into cold water, and of bathing it in the urine of a healthy child, or in wine.

If the baby does not cry lustily, Soranus adds, the cool air of the room will soon prove effective, and then it must be kept warm, and lie with its

¹ Soranus of Ephesus. *De Arte obstetricia morbisque mulierum quae supersunt*, Dietz, 1838.

head high after its eyes have been bathed with water containing a little salt and soda. All this sounds like the teachings of Hippocrates and it is also quite modern.

Sarton says (p. 95 ff.) that Soranus discusses the question as to whether men and women have different diseases because of their different functions, finally deciding that the two sexes do differ so markedly that women should therefore be treated only by women who can understand their anatomy, in fact, says he, "A midwife is demanded by the public." On the other hand, however, he quotes Zeno and Aristotle and Asclepiades and Thessalos and Themison as teaching that the diseases of men and women differ only slightly, though men do not have babies; while Herophilos disagreed with them all, because to him the uterus seemed to be a mere muscle and therefore it could not influence the rest of the body.

Soranus illustrated his gynecology with pictures of the obstetric chair, of syringes, the vaginal speculum, etc. His book, written in Greek, was copied and recopied more or less imperfectly for hundreds of years by monks who understood scarcely a word of what they were writing because in the Middle Ages it was considered beneath a man's province to treat or even understand women's diseases. The teachings of Soranus were written in such a manner as to be easy to memorize, for we can scarcely believe that every medical woman had a private library of manuscripts. Soranus long outlived his generation. Aëtius, in the 6th century, classed him among the four great masters: Rufus and Soranus, on gynecology; Leonidas on surgery; and Philumenus,

quoting from Oribasius, on drugs; entirely omitting the great Galen.¹

Turning to Pliny the Elder, who was killed while watching the destruction of Pompeii in A.D. 79, we find according to Sarton (p. 249) that he mentioned one hundred and forty-six Roman and three hundred and twenty-seven Greek writers, most of them now only names to us because their works are lost, but among them were several medical women writers. These losses were partly due to the burning of the library of Augustus, the destruction of the Temple of Peace which contained among other priceless books several manuscripts of Galen, and the ruin of Herculaneum and Pompeii with all their collections of books and other treasures.

Unfortunately, much of Pliny's own work has been lost and it is therefore impossible to know whether he assigned dates to the names of those women whom we find in his *Natural History* or not. Such common names as *Lais*, *Antiochis*, *Olympias*, *Aspasia* and *Cleopatra* occur again and again and we wonder if some *Who's Who* will ever unravel the mystery of their existence. However, if we turn to the actual translations of Pliny's texts,² we find the account of *Olympias*, the Theban, who wrote a valuable book of prescriptions containing one chapter on the diseases of women, another on the prevention of abortions, and still another on the best ways of causing an abortion if absolutely necessary to save the life of the mother. This

Olympias could not have been the mother of the great Alexander, as *Plutarch* suggests, because the early *Olympias* was a specialist in poisons and antidotes. *Photius*, a distinguished Byzantine prelate of the ninth century, mentions an *Olympias* of Thebes as an important woman doctor of the time of *Soranus*, i.e., of the time of *Tiberius*, or somewhat earlier, who was a Greco-Roman physician of note. If we turn again to *Pliny*,¹ we find some of her remedies for female diseases and her use of hisop and nitre added to bull's gall on a pessary or tampon to promote menstruation.² She uses a purgative to cure sterility,³ and she is careful not to produce prolapsus uteri by her powerful mixture of goose-grease and mallows,⁴ although at times "this may be essential."

Pliny tells us⁵ that *Lais* and *Elephantis* wrote on menstruation and abortion. *Athenaeus* (fl. 200 A.D.) also mentions this fact. It was said that *Elephantis* was a noted abortionist who also wrote obscene poetry, but we may as well discount this and doubt that her poetry was worse than the common vulgarity of the time, but the *Elephantis* mentioned by *Pliny* may have been the friend of *Tiberius* and quite another person from the one mentioned only by *Martial* and *Suetonius* as lascivious. *Soranus* mentioned an *Elephantis* who was a lecturer at one of the medical schools in Rome, and so beautiful that she felt obliged to lecture behind a screen to hold the attention of her pupils. *Lais* was her contemporary, and *Pliny* says that both "*vocatæ sunt sapientesque*

¹ We may note here that *Soranus* was born in Asia Minor; he lived 98-138 A.D., was the son of *Menander* and *Phoebe*, and studied in Alexandria; he believed heartily that women were the divinely appointed agents to care for sick women and children.

² Bohn Lib., Vols. iv, v, 1856. Vol. iv, Book xx, Chap. 84, p. 285.

¹ Book xxviii, Vol. v., chap. 19, p. 302.

² Chap. 77, Vol. v, p. 360.

³ Vol. v, chap. 77, p. 363.

⁴ Vol. iv, Book xx, chap. 84, p. 285.

⁵ Vol. v, Chap. 23, p. 305.

elegantes," although they may have been earlier than his time.¹

Galen, however, seems to have

in the teeth, dog's milk, dried cicadas for colic, millipedes rolled into a ball and cooked in oil for earache, the liver



FIG. 27. WOMAN OF TIME OF TIBERIUS IN COSTUME OF PRIESTESS OR DOCTOR.

believed that Elephantis and Lais were the contemporaries of Soranus and the friends of Tiberius mentioned by Suidas and Celsus.²

Pliny also mentioned Salpe, a native of Lemnos,³ as believing in the use of animal remedies such as testicles, marrow, the heart of a lion, the brain and tail of a camel, fat, dung, toasted earthworms, spider's eggs for cavities

¹ Schacher and Schmidius. *De Foeminis ex arte claris* (1738).

² See Galen's *De Compositione Medicamentorum*, Lib. I, cap. I, Sect. x.

³ Vol. v, Book xxviii, Chap. 80-81, pp. 300, 365, 369.



FIG. 28. OPERATION WITH MUSIC. FROM PLINY'S NATURAL HISTORY.

of a mad dog as a cure for its bite, menstrual fluid as a cure for malaria, and urine mixed with the white of an ostrich egg for bathing sore eyes (p. 365). It is impossible for us to excuse this treatment of Salpe's if it is an actual fact that she used such remedies, but there are people today who use some of these disgusting animal products believing in the efficacy of anything vile as a last resort, the more miraculous the cure the better. She was quoted by Athenaeus, 200 A.D., as a writer on women's diseases, a poet, and the leader of a sort of dinner club the members of which met to eat and discuss interesting subjects.¹ Pliny also mentions Sotira² on the treatment of difficult menstruation. Her book seems to be in the library in Florence (Labbé).

¹ Pliny. *Natural History*, Vols. iv, v. Bohn Lib. (1856).

Pliny's *Natural History* was printed in Venice in 1496, with illustrations. In an edition of 1525 we see a man being operated upon for hemorrhoids while a fiddler is trying to divert his mind from his pain. Whether Pliny had suggested this as worth while can not be proved. The Summary of foreign authors quoted by Pliny, Vol. v, Chap. xxviii, p. 369, is followed by a few explanatory notes.

² Book xxviii, Vol. v, Chap. 23, p. 368.

It is not surprising that gossip was busy with the medical women of pagan Rome at a time when morals were at the lowest ebb and there was so much that was debauched and obscene, especially in the reigns of Nero and Caracalla, but yet there is less of scandal about the women than about the men doctors. Tertullian (150-230 A.D.) hurled sarcasm at them for their use of speculums, tubes, hooks, dilators, and knives, but he, a non-medical man, could hardly have understood the proper uses of such instruments. The Roman ideas as to the viability of the fetus were those of today, and if the physicians lived up to the Hippocratic creed they were careful not to do any harm if they could not cure their patients. They had no scruples against saving the life of the mother by sacrificing the child if that was necessary.

Another of the well-known medical writers before Galen was Scribonius Largus, physician to the Emperor Claudius, and his traveling companion on the journey to his western colonies in France, Spain, and Britain, in A.D. 43. To fill in his time Scribonius made lists of the remedies in use wherever he went, adding them to those already in use in Rome. It is evident that he was writing with one eye on the nobility's patronage, for while quoting from thirty-five men of great reputation he also quotes from five women of the royal families of the period who had evidently studied medicine with the chiefs of the various schools and enjoyed dabbling with drugs and trying their mixtures on the members of their households. In the immediate royal circle was Messalina, wife of the Emperor Claudius. She was said by Juvenal to have been a female horror. It is thought that she

studied with a lover named Vettius Valens, the founder of a new medical sect. Of an earlier date were Livia, the wife of the great Augustus; and the two sisters of Augustus, Augusta and Octavia; and Antonia, Mark Antony's daughter by Octavia, the beautiful Clytie of the sculptors. Ruellius, who published an edition of Scribonius Largus in 1529, said that these women were as famous, medically, as any man of their own or later times, not excepting Galen and Avicenna!¹

Of Messalina's contribution we may quote her tooth paste (from Schonack):

"Denn Messalina, die Gemahlin unseres Gottes, des Caesar, gebraucht folgendes Mittel: 1 Metze in einem neuen Topfe gebrannter und in Asche verwandelter Hirschhörner, 1 Unze chiischen Mastixharzes, 1½ Unze Ammonsals. (No. 60, p. 32.)"

Guglielmo Ferrero, the well known Roman historian,² tells us that all the women of the time of Scribonius Largus were free to come and go as they chose. The women of the nobility were especially well educated. Livia, the wife of Augustus, had a better education than either of her husbands, and being philanthropically inclined she was always busy for the welfare of her subjects. Her house on the Palatine Hill is still a model of comfort and beauty though perhaps it was never so palatial as the homes of other members of the nobility. No scandals about Livia seem to have come down to us, and she was a model of puritanical propriety, a priestess

¹ Scribonius Largus. *De Compositione Medicamentorum* liber (1529); also an edition of 1635 by Rhodius with notes, illustrations, and glossary, and an edition translated by Wilhelm Schonack, in German, 1913, dedicated to Sudhoff and Meyer-Steineg.

² Ferrero, G. *The Women of the Caesars* (1911). (See Fig. 26.)

with a surprising knowledge of priest-craft and medicine. Julia, the daughter of Augustus by his first wife, who became the wife of the elderly Agrippa, was as scholarly as Livia, but she strayed from the path of virtue and devoted her medical knowledge to the composition of poisons and antidotes and empirical experiments.

As for the two sisters of Augustus, Augusta and Octavia, they not only studied medicine and practiced in their homes, but they encouraged the best physicians in their work and "invented many useful remedies." Octavia became the first wife of Mark Antony before he became enamored of the beautiful Cleopatra of Egypt. Scribonius Largus quotes from Octavia's book of prescriptions the following remedy (p. 32, Schonack): "Dies mittel hat Octavia, die Schwester des Augustus angewendet." "Take barley flour, honey, vinegar mixed with salt; bake them, then pulverize with charcoal and scent with certain nard (or spikenard) flowers for a tooth paste." She also recommended Messalina's tooth paste, and another made of ground glass and radish skin, and another of pellitory and ground bone.¹

Of the remedies of Augusta and Antonia we have several from Scribonius. For ulcerated sore throat they gave a mixture of spikenard and honey with myrrh, saffron, alum, caraway seeds, celery and anise seeds (p. 36). Augusta's plaster (p. 81) against animal poisons contained orris root, the fat of dog's brain, milk of wild figs, dog's blood, turpentine, ammonia, wax, oil, and onions, to draw out the poison. For angina she used a mixture of ox-gall, pyrethrum,

elaterium, honey, hyssop and pepper. Scribonius said that this was almost strong enough to raise the dead. He gives us her remedy for sciatica (p. 117), containing sweet marjoram, rosemary leaves, Falernian wine and olive oil. This was to have several mixings and strainings and heatings and was combined with wax and kept in an earthen jar for future use as a plaster. Both Augusta and Antonia used a variety of remedies to cure neuralgia. Scribonius says that he can testify to the value of the following prescription for intense pain (edition of Ruellius, p. 183): "Take lard or goose-grease, add wine, cardamom seeds, rose leaves, various nards and cinnamon," but he does not say how this mixture is to be used. They made a wonderful salve to soothe the pains of childbirth,—“quite analgesic” he says it was, composed of lard and rose leaves, cypress, and wintergreen, but mandrake and poppies seem not to have been included for this purpose. They also had a famous ointment called acopum for pain in the back to be used with great friction, and for the bite of a mad dog, or for poisoned food. Augusta used a remedy composed by her teacher Triphonius (Schonack's trans. p. 81), containing iris root, castor bean, turpentine and sal ammoniac. This, they said, should be kept in glass.

It is therefore evident that during the first and second centuries after the birth of Christ, while the Romans were still worshipping their pagan gods, there was more medical activity than ever before. Lanciani¹ tells us that the women of the nobility were the "most beneficent and tenacious among the cohesive powers of the

¹ Schelenz, H. *Geschichte der Pharmazie* (1904), p. 165.

¹ Lanciani, R. *Ancient and Modern Rome* (1925).

nation." They enjoyed the greatest social liberty and the greatest legal and economic autonomy, but their life was so full of their own interests that they were blind to the warnings of the tragedies that were to come with the loss of their old gods and the persecutions of the followers of the Christian preachers. Among the common people, moreover, there was also more independence than ever before, more opportunity for study, and there were more public medical positions to be filled by women. Sarton (p. 264) tells us of a certain Pamphilia, mentioned by Suidas as physician in Nero's family. She had studied at Alexandria and at Epidaurus and was writing an encyclopedia of literature in thirty-three volumes, while Scribonius and Celsus were writing on medical and scientific subjects. Although she may have lived at the time of Nero she was often confounded with an earlier Pamphile. Harless (p. 127) calls her Pamphile of Epidaurus, and says that she wrote a book on venereal diseases which is now lost, "*De pharmacis rebusque aliis venerem incitantibus*," and he adds, "her name is confused with a literary writer from Egypt of Nero's time" (cited by Photius). It has also been suggested that she was sometimes called Sotira or the daughter of Soteris, a midwife of great reputation mentioned by Pliny as the author of a book on menstruation. Apuleius, however, adds a bit of spice to this mix-up of identities by saying that Pamphile so yearned to fly that she anointed her body with oil and tried in every way to sprout wings like an owl and invoked all the gods of the air, but alas, she was not so far ahead of her time as to understand the mechanics of flying, even though she may have

had an intense belief in the gods of Epidaurus and their miraculous powers.

Among other medical women of this period Photius cites an "*honesta matrona*" who could cure epilepsy, sterility and diseases of elderly women. Witkowski¹ mentions a certain Marpessa who, while fighting in battle beside her husband, was taken with the pains of childbirth, helped off the field, and delivered by a midwife named Lasthenia, but though details are lacking about the woman, the baby, the battle, or the midwife, it is an interesting tale of the life of the time, and it recalls the current gossip of the birth of Vergil, mentioned elsewhere, for it was said that his mother delivered herself in a ditch by the side of the road as she was returning from work with her husband.

Several ancient writers mention a famous little woman doctor from Africa. She was called the "*muliercula*," and sometimes "*Africana*." She had studied at Alexandria in all probability, and became popular because of her remedies for pain in the eyes and abdomen. Scribonius Largus calls her an "*honesta matrona*," in evident admiration. One of her prescriptions quoted by him contained ivory dust for treating epilepsy, another was made of crocodile's blood and was prescribed for anemia in men, whereas dove's blood was used for women. She, like Messalina, used the burnt horns of a stag mixed with spices for various complaints. Galen praised this remedy, "*hoc medicamento muliercula quaedam Romae ex Africa multos remediavit*," and he adds that she sold it at a high price and it was difficult for him to obtain it. The

¹ Witkowski, G. J. *Accoucheurs et Sages-Femmes célèbres* (1891).

directions for compounding the prescription require five hundred words in the German translation.¹ We recall that Galen and Scribonius had also studied at Alexandria, and another contemporary of theirs, Aretaeus the Cappadocian,² had been a student there and perhaps the "little woman doctor" was also in their classes. However that may be, she as well as they followed the great Hippocrates quite faithfully, believing in a milk diet and simple remedies carefully prepared, and in the humoral theory. From Aretaeus, however, comes the most peculiar belief concerning the uterus. He had an idea that the uterus has intelligence of its own, and that it moves up and down or right or left, of its own volition. He also thought that the brain is the seat of the sensation, the blood the food of the body and transmitter of heat, the liver the source of the blood and white bile, the spleen the strainer of the blood and manufacturer of black bile, and the lungs sponges without feeling or great use. Scribonius, on the other hand, concerned himself not so much with anatomy and physiology as with drugs, and his book became the first dispensatory. In it he describes 242 plants, 36 minerals, and 27 animal products, all more or less employed in his own time. This, then, gives us a glimpse of the Alexandrian school, which, like the others, was

coeducational, even as in the time of Herophilus and Agnodice.

Lanciani¹ gives us a vivid picture of the sanitation of Rome in this first century when the city had 800,000 inhabitants, poor drinking water, and clogged sewers. Burials of the poor were in great public pits along with the refuse and garbage of the inhabitants. He calculated that one pit, uncovered after two thousand years, must have contained 6400 bodies, the odor from which was still a horrible stench; but in the time of Augustus the rich were cremated and their ashes placed in columbaria. Varro, a Sabine (116-27 B.C.), in his "De re rustica," tells us that pestilences raged in Rome, and malaria was rampant in his time. He thought that these diseases came from the marshy districts where "insects prosper but are so infinitesimal that no human eye can see them or detect their presence." Therefore, where there was so much sickness we see the need for medical women as well as of men, and we are not surprised to find such really great women as a second Aspasia, and a Cleopatra and a new Metrodora, who were working as physicians and writing books on medicine which were used and quoted for more than a thousand years. Of them we shall learn more a little later, meanwhile running over the names of other women doctors mentioned by their contemporaries.

Of the women named by Galen there are Favilla and Origenia, whose remedies for hemoptysis and diarrhea he praised; and Eugerasia who had a good remedy for nephritis which contained squills and bryonia, white pepper, cedar berries, iris root, myrrh and wine; Meurodacia whom he calls

¹ See Schonack's ed. of Scribonius, No. 122, p. 61.

² Cordell, E. F. Aretaeus the Cappadocian. *Johns Hopkins Hosp. Bull.*, 20: 371, 1909. It is worth noting that though Aretaeus was from the Alexandrian school and was living in Rome while Galen was working there neither mentions the other in any remaining volume of their work. Twenty-two volumes of Aretaeus are lost, including what he wrote on gynecology.

¹ Lanciani, *op. cit.*, p. 104.

Maia, was perhaps a midwife, and evidently well known, and *Margareta* was an army surgeon. Galen mentioned several prescriptions of women doctors which he found useful, one prepared by *Samithra* and another by *Xanita*, the latter being like a Dover's powder in composition. We can only wonder what these women thought of Galen and the other men doctors of their day. That they had most of the gynecological practice is not doubted, for Galen failed to mention that he ever had a woman as a patient, so we may infer that in all probability men did not practice gynecology any more than obstetrics, since the Roman department of health employed women specialists in those branches of medicine after the time of *Soranus*. One of these specialists was *Metrodora*, mentioned as a contemporary of *Soranus*, who wrote a Greek treatise on diseases of the uterus which, in a manuscript of the twelfth century, is still in existence in the Laurentian library in Florence. *Sarton* (p. 283) says that nothing is known of her except that she wrote this treatise "which seems quite valuable," and he adds that it is probably the oldest extant medical treatise composed by a woman. It is written on 263 pages of parchment divided into 108 chapters, on diseases of the uterus, stomach, and kidneys, containing also valuable prescriptions for these diseases. *Harless* (p. 130) suggests she may have been a man, but for no reason except that there was also a *Metrodorus*, a man doctor.

The famous *Galen of Mysia*, physician to *Marcus Aurelius*, was considered second only to *Hippocrates* up to the seventeenth century A.D., that is, the only original worker in every branch of medicine whose

writings were used by every school of medicine. He was born in *Pergamon*, in *Asia Minor* 129 A.D., and lived until A.D. 200. His medical books were never seriously criticized by his followers even after the Church became the dictator in politics, religion and medicine, notwithstanding that *Galen* lived and died a pagan. *Vesalius* and *Paracelsus*, in the sixteenth century, were the first to refute certain of his statements about anatomy, though they were previously known to be false by all anatomists who had dissected a human body, since to *Galen* the anatomy of the pig was a perfect substitute for that of man. We have seen, however, that while *Galen* was alive there were many medical sects in *Rome* and her provinces, and evidently to most of his contemporaries he was not so great as to his own patients and successors. To the emperors of his time he was the oracle of all medical wisdom. He arranged the medical courses for the royal schools, and advocated a seven years' course for both men and women. His special field was the medical school on the *Esquiline Hill* near the palace and gardens of *Maecenas*. He insisted upon having the students visit patients with an instructor. One of *Galen's* colleagues at this school was a woman doctor named *Antiochis*. She was a specialist in diseases of the spleen, arthritis, sciatica, and was concerned for the preservation of female beauty. *Galen* himself copied her prescription for a plaster to use in dropsy and sciatica, another for pains in the chest, and one for gout in the feet. There has been some doubt as to the identity and date of this *Antiochis* of *Galen's* time, for there was a woman doctor of that name in the time of *Heraclides* of *Tarentum*,

in the first century B.C.,¹ and another to whom the town of Tlos in Asia Minor erected a monument or a tombstone once upon a time, which reads as follows: "Antiochis, daughter of Diodatos of Tlos, the Council and officers of the town, in appreciation of her medical ability raised this statue at their own expense."²

Thus we see that in general it was no unusual thing for women doctors to be treated like men doctors in the first two centuries A.D., if they were in good repute.

Of all the women doctors of the first two centuries A.D. who were specialists in gynecology and obstetrics, Aspasia and Cleopatra stand out as preeminent.³ We have seen that in the old Greek times all the obstetrics was in the hands of women as well as the treatment of women's diseases. Occasionally in a case of difficult operative midwifery a strong man was called to assist the midwife or to make a cesarian section on a dead mother. The Greco-Roman Aspasia, however, was herself equal to all emergencies. Aëtius⁴ must have seen a copy of her great book which is lost to us, for he gives many quotations from it, and we must therefore quote her through him. Possibly the books of Aspasia to which he referred were burned in one of the many fires which consumed the works of Galen

and other great writers. Aëtius wrote the *Tetrabiblion*, an encyclopedia in four volumes of four parts each, in which this Aspasia was praised for her great skill in podalic version, and in the diagnosis of fetal positions, and in her treatment of dysmenorrhea from which many young girls suffered. In one chapter he quotes her method of managing difficult labor, in another chapter he tells how she provokes the death of the fetus if necessary; another chapter is on the treatment of suppressed menstruation. Speaking generally, however, Aspasia tries to impress her pregnant patients with the necessity of being extremely careful not to cause abortion. They should not take chariot rides over rough ground, nor exercise violently, nor worry needlessly, nor carry heavy loads, nor eat spicy and indigestible foods, nor be bled, but they should be happy, live quietly, eat sparingly, and take mallows, lettuce, barley juice and such simple medicines for constipation. At the time of labor they should have hot drinks, hot sitz baths, and call the obstetrix early.¹

In the opening chapter of the *Tetrabiblion*, Aëtius² discusses the questions of generation, pregnancy, sterility, labor, the anatomy of the uterus,

¹ Petrus Baelius tells us that there were three Aspasias, one the wife of Pericles, another famous at the time of Artaxerxes, and a third immortalized by Aëtius, "who practised in old times"; and of all Aëtius said, "Sapientesque et elegantes a Xenophonte vocatae sunt," but for many reasons it seems that there was a fourth Aspasia, of an uncertain date, whom Aëtius mistook for the earlier one.

² Aëtius Amideus. *Medicae artis principes post Hippocratum et Galenum* (1534), translated by Janus Cornarius, Medicus. Dedicated to two physicians, Domine Jerome Montuo and Hugo Solerius, and to Henry II.

¹ Clericus, *Hist. Med.*, p. 434, on the authority of Asclepiades, *Lib. iv.*

² Lipinska, M., *Histoire des femmes médecins* (1900), p. 58.

³ Baas. *Grundriss der Geschichte der Medicin* (1876), p. 72.

⁴ Aëtius of Amida in Mesopotamia (527-565 A.D.) wrote in Greek, but his *Tetrabiblion* was translated into Latin and later printed by order of Pope Clement VII, in 1534. It fills 2000 pages in double columns. We shall learn more of him in another chapter.

menstruation, classed by Aspasia as a purgation appearing about the fifteenth year and continuing until the fiftieth or even sixtieth year, its painlessness depending upon food, exercise, diseases, etc. Then as to the desire for strange foods during pregnancy, the nausea, and swollen feet, to each he gives almost a chapter of quotations from Aspasia.

In Chapter xii he quotes her as to the prevention of abortion, and the necessity, as already mentioned, to avoid violent exercise, hard falls, eating indigestible food, constipation, and to take laxatives such as rhubarb, lettuce, dock, mallows, etc.

In Chapter xv we find the treatment of difficult labor when the introitus is narrow, by the application of hot lotions to the vulva made from olive oil, mallows, flax seed, the oil from a swallow's nest, herbs, etc. If the placenta is adherent the patient must close her mouth and nostrils and force it out.

To prevent conception wool tampons are to be placed in the vagina soaked with a preparation of herbs, pine-bark, nut-galls, myrrh, wine, etc. (in case it is dangerous for the patient to become pregnant, not otherwise).

In Chapter xviii we find how to cause a necessary abortion; the thirteenth day after the date of missed menstruation the patient is to be hauled and pulled by several people and jerked about, or she must lift heavy burdens, using high douches of strong herbs, take hot sitz baths, drink a tea of rue, artemisia, oxgall, eleterium, and absinthe and violet roots. She must have poultices on the abdomen. By the fourth month the child will be dead and labor will commence. After labor the patient is to be bled profusely.

In Chapter xxv, Aspasia gives the following advice: After the removal of a dead fetus the patient should have soft foods, injections, purgatives, but avoid hot drinks. The pubes and vulva are to be anointed with oils, and, if fever appears, astringent foods are to be given, and she is to be bled freely. Aëtius in this chapter quotes other writers on the subject of sterility, the care and treatment of the breasts, and surgical operations.

For suppressed menstruation Aspasia and Rufus¹ both advise examining the patient to see if the uterine os is closed or can be stretched; if the opening is enlarged by cutting it must be kept open for fear of contraction. Soranus of Ephesus is also quoted here as advising Cleopatra's treatment for menorrhagia and prolapsed uterus by tampons. He says that a prolapsed uterus may have to be removed by surgery, but this is so dangerous that a tampon and belt, with rest in bed, are safer.

In Chapter lxxvii Aëtius quotes Aspasia again as to the treatment of malpositions of the uterus. These are due, she says, to the veins from the liver being so full that the weight of the bowels and flatus push the uterus away from its usual place. The treatment is by tampons of tar or bitumen or hot oil. She replaces the uterus with her fingers. If there is suppression of the urine it may be necessary to make an artificial opening into the bladder. An enlarged uterus is to be scarified and tamponed. Operations to reduce the size of uterine tumors, even with peritonitis seem to have no terrors for these authors. Soranus softens a scirrhus tumor with salves

¹ Rufus of Ephesus was a contemporary of Soranus of Ephesus. They lived in the first part of the second century A.D.

and teas. Archigenus, using a speculum in the vagina opens an abscess, squeezes out the pus, and tampons the uterus with hot sponges.

In Chapter xcii Aspasia gives rules for treating noma of the uterus by the milk of a horse or ass; the patient's hips are to be elevated and a tea of iris root with absinthe and mallows is to be poured into the vagina.

In Chapter xcvi she treats hemorrhoids of the uterus by surgical methods followed by tampons of mallows, red-earth, rose-water, the juice of mandragora, hemlock, etc., according to the rules of Hippocrates, adapted by herself.

Chapter c is on surgery. Aspasia dissects and replaces the intestines for hernia, closes the wound with two or three sutures, and advises against the use of wet dressings.

In Chapter cii, she treats varicose hernias by resection, separating the adherent membrane and sewing it to other parts of the sack.

Chapter cvii, on condylomata of the vulva, shows us how Aspasia softened them by hot fomentations and astringent salves.

We can only regret that the writings of Aspasia as a whole have not come down to us as they did to Aëtius, for she evidently was a highly intelligent surgeon and obstetrician, quite the equal of any man of her time. Aëtius also must have seen the work of Cleopatra on Cosmetics, for he quotes from her at great length in Chapter vi, of this same volume iv. He makes the mistake of calling her Queen Cleopatra, which is perhaps natural at a time when historical research was not very critical. But we are grateful for the records he has rescued from oblivion. Hieron Mercurialis (see Spach, p. 298) quotes Aëtius' description of

the case of prolapsed uterus removed by Aspasia, and he adds that the patient lived healthy for many years after the operation, "sanas supervixisse."

There was a famous gynecologist named Cleopatra in the second century A.D. Exactly who she was, or what her pedigree nobody knows, but she appears to have lived in the time of Trajan, as did Soranus and Rufus, and either she copied some of the materials in her book on women's diseases from Soranus or he copied from her, which is more than probable, for her book was very much used until the time of Moschion, in the sixth century; after this time it was lost or confused with the work of Moschion, until the end of the sixteenth century, when its remains were rescued by Wolff and Spach and published in a great volume of the collected works of many writers on gynecology and obstetrics. Her name has been confused with that of the famous Egyptian queen, especially since she dedicated a book on general medicine to her sister Arsinoë, and made other hints which have been construed to refer to her as of royal birth rather than to herself as a gynecologist. It is said that Galen copied many of her prescriptions from a manuscript by Crito, her own having been burnt, and he added admiringly that she also wrote on cosmetics and skin diseases. This is all that we know about the great gynecologist except what we glean from the remains of her gynecology in both Greek and Latin, published along with that of Moschion in 1566, by Caspar Wolff of Trier, in a volume called "*Harmonia Gynaeciorum*." Among its articles is this of Cleopatra, together with Moschion's and one by Theodore Priscianus, arranged in three parallel columns.

Of the
publis
H. A
is ver
serve
himse
withe
tice
publi
could
print
son,
help
from
from
Priso
sicia
400
were
patr
writ
gynec
the
that
beca
doct
the
skin
in
first
Mos
com
den
he c
his
wor
from
cius
fran
1
2: 1
born
was
1610
his
whi
form
stuc

Of the edition of this gynecology published by Israel Spach, in 1597, H. A. Kelly says,¹ "Spach's volume is very valuable in that it has preserved many works now lost." Spach, himself, in the introduction says he wishes he could have done more justice to Cleopatra, but evidently he published everything of hers that he could find. Priscian, whose work is printed along with hers for comparison, says that she wrote this book as a help to her daughter, Theodata, partly from her own experience and partly from earlier Greek and Latin writers. Priscian himself was the court physician to the emperor Theodosius in 400 A.D. He tells us also that there were two medical women named Cleopatra in the time of Galen, one a writer on cosmetics, the other a gynecologist, but we may judge from the testimony of other women writers that the two Cleopatras were one because in those days most women doctors were interested in improving the looks of their patients and treated skin diseases as an aid to curing them in other ways. It was Wolff who first "harmonized" the writings of Moschion and Cleopatra by adding comments of Priscian who was evidently an admirer of women doctors, for he dedicated his own books to certain of his contemporaries who were medical women. Harless (pp. 123-127) quotes from Reinesius and Merklin and Fabricius concerning this Cleopatra. They frankly have no opinion on the subject

of her identity, confounding her with the earlier Queen of Egypt, and with a wizard of a later date. Petronius added one more item to the problem by supposing her to have been a courtesan. Finally, Tiraquellus, Fabricius, and others suppose that this Cleopatra was a very real physician and noted gynecologist who quoted somewhat freely the ideas of Soranus though not his words. Tiraquellus mentions a Codex in the Montfaucon library, "*Cleopatrae Gynaeciorum libri iv, a Sorano collecti*" (73, no. 15), and Piero Giacosa found fragments of her book in the Bib. Angelica, the National library at Turin, in which was the dedication to her "*filia carissima Theodata*," and the signature "*Cleopatra, Arsinoe's sister*." It would be interesting here to discuss what Wolff and Spach have published of this historic document, but in a word we may say that in its teachings it does not differ materially from the work of Aspasia or Soranus, and that Moschion successfully elaborated it with his own comments. These treatises of Aspasia and Cleopatra, however, whether anonymously or not, were used by midwives for centuries, and served as a basis for many other later books on gynecology and obstetrics.

One evidence of the existence and popularity of women doctors in all ages is the legends on their tombstones. This is as true in the Roman Colonies as it was in Greece. Some of these gentle reminders were erected by patients to their doctors, others are from husbands to exemplary wives who were medical women, and others have merely a name followed by the Christian refrain, *in pace*.

In the "*Corpus Inscriptionum Latinarum*," Lanciani found the names of

¹ Kelly, H. A. *Johns Hopkins Hosp. Bull.*, 2: 18, 1891. Kelly says that Spachius was born in 1550, studied medicine at Tübingen, was professor at Strassburg, and died in 1610. His great book contains nothing of his own but it includes many valuable books which are now exceedingly rare in the original form, and it is of great importance to the student of history.

hundreds of physicians, both men and women, belonging to the great families. He mentions Julia Pia, Minnia, Teren-



FIG. 29. TOMB OF WOMAN DOCTOR. FROM MUSEUM IN SPALATO.

tia, Venulaia, for example, "who attended women in confinement or other diseases." He says (p. 29) that these *medicinae* were, as a rule, emancipated slaves who had practiced in private families and become apothecaries or surgeons in their old age, although some of them were imposters.

Among the inscriptions¹ that may have dated from Greco-Roman times we take the following: Sallustia Q. L. Merita; Marcia L. Agrippinae Opstetrix; Julia Liberta Sabina, Minucia Medica, which may be translated, Julia, a Sabine woman, the freed slave of Minucia, a doctor, erected this monument. There is another² which reads, *Helpis Liviae ad Valetudinem*; another³ is, *Secunda Livillae S. Medica*; another⁴ from Verona reads, *C. Cornelius Meliboeus, sibi et Sentiae. Elidi Medicae Contubernali*, (his companion). It is said that Lucretius joked about the splendid purple robes of

¹ Gruterius, Janus. *Inscriptiones Antiquae* (1707).

² Spohr. *Miscel. antiq. erudit.*

³ Quoted by Le Clerc and Jeanne Chauvin.

⁴ Quoted both by Gruter and Rhodius, "an elegant monument to a woman doctor."

this medical woman. Another¹ is from Urbino, *Deis Manib. Juliae Q. L. Sabinae Medicae*. Q. Julius Atmeius *conjugi bene merenti*. Another, Forella T. L. *Melamona Medica a Mammis* (from a collection by Walch). From Nîmes in southern France² comes this, *Flaviae Hedones Medicae Ex T.* The following comes from the fountain of the Trevi,³ in Rome: *Minucia C. L. Aste Medica*. Also this⁴ is from Rome, to a priestess doctor: *Secunda Livillae Medica, Ti. Claudius Caesaris. L. Celer. Aedituus A. Vesta*. In the "Corpus"⁵ collected by J. K. Bailie (1846), we find (Vol. II, p. 94, cxix) one in Greek to *Casilontis*, a medical woman (*Sonatotheke Kasilontos Trines*). In Gruter there are several epitaphs to nurses, such as this one: *Cassia L. L. Zmytna, nutrix, v. A. xxix.* (Gruter p. DCLX, no. 2); and this from a nurse to her little patient: *D. M. S. Emilii. Nisi Vixit. Mensib. xi, Fecit Valeria Hygia. Nutrix.* Gruter also gives several epitaphs to obstetrices, such as this: *Antoniae. Aug. L. Thalassae, Obstetric. (No. 5, p. DCLXXXVI.)* And another (p. DCLII, no. 10) from Rome: *Sex Pompeius Sex. L. Daphnis Gram Chloë. Pompeiae Appi. Obst., and this: Atia Dynamis Obst. And (no. 4) found at Tibur: Mariae. C. et Suavitate L. Agrepinae. Obstetrici.* There is still another (D.C. xxxvi, no. 6): *Sallustia,*

¹ Quoted by Scribonius Largus, and also Gruter, p. DCXXXVI.

² Gruter. Vol. I, p. CCCXII.

³ Gruter. Vol. I, p. CXXXVI.

⁴ Gruter. Vol. I, p. CCCXII.

⁵ See also Bailie, J. K. *Fasciculus Inscriptionum Graecarum* (1842-1849).

See also Henzen, Wilhelm, et Rossi, J. B., *Inscriptiones Urbis Romae, Latinae* (1876-89).

And Hübner. *Inscript. Hisp. Lat.* (1869). Also Nunn, H. P. V., *Christian Inscriptions* (1920).

Q. L. Imeria Obstetrix, Sallustius Q. L. Artemidorus Arescusa, Fecit.

It must be noted that none of these epitaphs come from Christian tombs, and many of them are difficult to interpret because of the lavish use of periods and abbreviations, but they are sufficient to show that in the Greco-Roman period there were many women doctors as well as nurses and obstetricians, and that they had a good standing in their communities even though they may not have written encyclopedias of all knowledge, or, if they did their works are lost. Many books of Pliny, and the first five books of Ptolemy are also lost, and, worse still, many spurious books concocted by imposters have been attributed to great authors. Therefore we must be as content as possible with the work of Aspasia, Metrodora and Cleopatra, and with the epitaphs on the tombstones.

Before closing this chapter on the Greco-Roman medical period in Rome and the Colonies we should make a hasty review of the medical treatment, the hospitals, and the schools in the early centuries immediately after the taking of Corinth by the Romans, 146 B.C. We have seen that there were several medical sects, each with its schools and teachers, culminating in the great school of Galen, which in one form or another, but always based on Hippocrates, lasted for hundreds of years. We can almost imagine Nero fiddling a tune to the names of the drugs mentioned by Dioscorides, so mellifluous do they sound, belladonna, helleborus, aconitum, terra sigillata, and many others. Pliny and Dioscorides have given us lists of more than six hundred plants used in medicine along with many disgusting and loathsome animal remedies given

for a purely psychic effect. These lists were copied and, what is worse, used by physicians for sixteen hundred years. We shudder today at the remedies praised by Pliny, the spider's eggs, dog's milk, dried cicadas, milipeds rolled into pills, animal's dung, and others equally filthy and useless, but at the same time we are more or less amused at the absurdity of a host of these so-called remedies. With a pill of reseda, or mignonette, for example, the patient must spit three times and say "Reseda, allay this disease. Knowest thou not what chick hath torn up these roots? Let it have nor head nor feet."¹ To cure catarrh, tie two fingers together for a while. To heal a sore, take the roots of asphodel, hang them up in smoke to dry and the sore will be healed. To cure tooth ache, dig up a root of erigeron, spit into the hole, touch the tooth with the root, spit again, replace the root in the hole and the pain will vanish. To beget a black-eyed baby, eat a rat. For easy parturition, let the husband or lover tie his belt around the patient and then quickly remove it. The baby will be born speedily. Diseases of the uterus will be healed by wearing the milk-tooth of a child on a bracelet. The tongue of an eagle, worn as an amulet, cures cough. For styes on the eye, cut off the heads of a few flies and rub the eyelids with their bodies. For pain in the bowels wash the feet and then drink the water. A few little bugs found in the body of a spider, if bound to the flesh of an over-fecund woman, will prevent her conceiving for a year. To keep the hair from falling out impale fifteen frogs on bulrushes, etc. It is a relief to know

¹ Thorndike, L. *Magic and Experimental Science*. Vol. I, p. 23.

that Galen rejected many of these remedies of Pliny such, for example, as this: frog's blood rubbed over plucked



FIG. 30. NOT A BELIEVER IN DRUGS BUT IN THE GODS, THIS OLD MAN BRINGS HIS VOTIVE LEG TO THE TEMPLE OR SHRINE FOR HEALING.

eyebrows will prevent the hair from growing again, and a bath of viper's blood will remove hair from the armpits, but Pliny told his somewhat skeptical nephew that these remedies must be good, for he had consulted two thousand books and one hundred reliable authors for them. Probably Dioscorides had done the same for his six volumes on *materia medica*. But it is interesting to note that some of these old remedies are still used by civilized people today. Worm oil and cobwebs and urine and dung are "medicine" to many foreigners in America, while to the Siamese seven

bedbugs wrapped in skin and swallowed are supposed to cure malaria, and roast grasshoppers are "good for" other diseases. It is not to be supposed that the women doctors rather than men were singled out as using such unscientific medicines for Laïs was the only one according to Pliny who used the animal products praised widely by Musa and his school.

Thus we have seen that women doctors taught in the medical schools, cared for the patients at the dispensaries, performed operations, and were the only obstetricians. Horace said that "their rewards were good, though gained at the price of fatigue," and we may add, of near oblivion. They had slaves to roll their bandages, and copy their notes (if they followed Hippocrates in keeping case records), to mix their pastes and poultices, and brew their herbs. If these women doctors were employed in private families as slaves or freed-women they were valued highly, and if as slaves they were sold they brought the highest prices in the market, even sixty pieces of gold. It was their duty to care for the children in the orphan asylums, one of which in the time of Tiberius or Trajan had five thousand waifs. And they had charge of the women in the private hospitals on the great estates such as those of the emperors Hadrian (76-138 A.D.), and Antoninus Pius (86-161 A.D.), and Marcus Aurelius (121-180 A.D.), all of whom built very comfortable and sanitary out-of-door hospital rooms for their guests, their servants, and themselves. Celsus complained that these private hospitals were better than those for the general public who could not be properly cared for at home, and Lanciani says that the cooks of Augustus fared better when ill

than many of the patricians. Therefore, since there was no science in medicine we may believe that their practical and educated common sense made women doctors of more value in sickness than was possible in the case of such compilers as Pliny, and Dioscorides, or of Musa with his fads, or Celsus with his literary writings, or of the men practitioners whom Martial and Juvenal mocked, or of the translators of Hippocrates like Eros or Erotian, the freed-man of Julia, herself a student of medicine.¹

In comparison with the medical women of today there may have been as many women writers in proportion to their numbers as now. Women, with their multifarious duties, seldom write medical books unless they have something new to say or have a gift for literary work. They are not often reduced to occupy their leisure by copying the writings of others even though they may add a few case records of their own with which to kill time at a medical meeting. It is their everyday work that counts in the world. Sir Aucland Geddes² has said

¹For references in connection with these statements see the following books: Walsh, J. The second Galen, *Med. Life*, Sept., 1930. Pater, W. Marius the Epicurean (1885), pp. 168-174. Cumston, C. G. Introduction to the History of Medicine (1926), p. 180.

²Geddes, Sir A. Social reconstruction and the medical profession. Contributions to Medical and Biological Research dedicated to Sir William Osler. N. Y., Hoeber, 1919, p. 78.

that much of the work of the medical profession is not man's work, and consequently the majority of its men members can with difficulty find inspiration in their daily round. He adds further, "Unconsciously women possess that sense for the future which is the essence of the emotion of human betterment." And thus women lose their own identity in their professional life unless they publish some new and startling discovery, but invention and discovery are not common feminine qualities: hence, since we take the word of Pliny and Scribonius and Soranus and Galen as to the value of individual men doctors in Rome and her Colonies, we may also take their word as to the women doctors of their own and previous years with the assurance that in every Country the pre-Christian women doctors were as well educated and as useful as men to the populations.

Accordingly, in view of the preparation which women had had in Egypt, Greece, and Rome for the practice of medicine, surgery, pediatrics, and obstetrics, it is not surprising that under the new religion of Christianity with its great bent toward social service and self-sacrifice women were quite ready to come forward with help for the sick and for the building of hospitals, the preparation of medicines, and the general duties of well trained physicians.

(To Be Continued)



[From Franciscus Vallesius' Hippocrates. Coloniae, 1589.]

EDITORIAL THE DOCTOR AS DIPLOMAT*

By C. S. BUTLER, M.C., U.S.N.

BROOKLYN, N. Y.

... "Nothing is more estimable than a physician, who having studied nature from his youth, knows the properties of the human body, the diseases which assail it, the remedies which will benefit it, exercises his art with caution, and pays equal attention to the rich and the poor." (Voltaire, François Marie Arouet, 1694-1778.) No one has put into fewer words the essentials of a good physician than did the immortal Voltaire in these.

As an individual the physician has for many centuries typified the most exalted qualities of the human being and while he has had to carry the religious quacks and self-interested charlatans of all ages, it is nevertheless a fact that Voltaire gave a true picture of him for all time.

The exact time and place of first use of the "mass effect" of physicians for the physical uplift of whole populations is not known. It is true, however, that most of the medical knowledge which would be effective in this type of team work has been developed during the past fifty years.

Since 1898 the United States has used her three commissioned medical

services with telling effect in capturing the good will and cooperation of our own insular peoples and of numerous alien races. It is not our purpose to point out the great benefit to humanity as a whole which has resulted from the scientific advances made by these various researches. The epoch-making studies of U. S. Army medical officers on yellow fever, tropical typhoid and sanitation, and of U. S. Public Health Service men in plague, beri-beri, ancylostomiasis and scores of other diseases are well known to us all. We shall attempt to show how immense the importance to government is the "well-found" medical service and how little short of impossible is the attempt to confer good government upon such tropical alien peoples without the cooperation of a disinterested and loyal group of physicians.

When a physician cures the bodily ills of a person, he generally acquires a friend, and whether that individual be prince or pauper makes little difference as far as the friendship is concerned. The same is true as regards the state in relation to dependent

* Read at the Annual Meeting of The American Association of the History of Medicine, Washington, D. C., May 8, 1933.

peoples. They will accept your proffered altruism if you will cure them of their diseases. But throughout the ages physicians have taken orders from two other types of specialists, the "Warriors and the Diplomats." History shows several instances of medical men being executed because they failed to cure their war lords of bodily ills. Civilization no longer demands such severe punishment. The Diplomats, however, often succeed in bungling a job in spite of all the physicians can do to prevent them, as we shall try to demonstrate.

After his visit to the Virgin Islands, March 25, 1931, President Hoover in a formal statement said:

When we paid \$25,000,000 for them (the Virgin Islands) we acquired an effective poorhouse comprising ninety per cent of the population. The people cannot be self-supporting either in living or government without the discovery of new methods and resources. Viewed from every point except remote naval contingencies it was unfortunate that we ever acquired these islands. Nevertheless, having assumed the responsibility we must do our best to assist the inhabitants.¹

This statement was *most* unfortunate because it left these poor people who had come over to our citizenship through no fault of their own with the feeling that they were practically without a country or a flag. It shows how thoroughly the spiritual values in our national life must be subordinated to the material ones. It was made with no *apparent* knowledge of the historical and diplomatic background upon which this transfer of sovereignty has been so vividly etched. A book which gives this background in well documented detail is that of Charles Callan Tansill. "The Purchase of the Danish West Indies."²

Briefly the Virgin Islands have been up for transfer to the United States three times. Negotiations extending over the period from 1866 to 1870 were defeated in the United States Senate. These negotiations were accompanied by much "high-hatting" on the part of some of those representing the United States, according to Tansill.

A second series of negotiations took place between 1898 and 1902 and this time it was Danish Parliament (Rigsdag) which defeated the project. The amounts for the sale involved in these first two trials were much less than those of the third trial. This last trial, which resulted in successful negotiations, took place in the winter of 1916-1917 and the transfer took place in February of the latter year. The Danish Diplomats recalling the unfortunate experiences of the past and possibly remembering how one of our Polar explorers had imposed upon the University of Copenhagen in 1909, set themselves the task of showing us what "finesse in diplomacy" really is like. When we recovered we had bought 83,120 acres of West Indian rocks comprising the Islands of St. Thomas, St. Johns and St. Croix and had paid approximately \$300 per acre for them, the whole bill amounting to \$25,000,000, and in addition we agreed, it is thought, to forget our birthright of discovery for any part of the continent of Greenland and give this to the State of Denmark. It is terrifying to think what they might have done to us had the negotiations taken place say during 1929 when we were feeling "rich and carefree." We might have lost to them our Scandinavian Northwest as well!

In all our so-called colonial possessions and in those West Indian and

Pacific states where it has been necessary for our government to intervene in the interest of humanity or for other reasons, the physician has taken a leading part in smoothing the way for our Department of State. When we consider what effect the transfer of sovereignty and citizenship has meant to the Virgin Islanders, our sympathy for them must be extended. (a) Our Panama Canal cut down their shipping enormously. (b) Our sovereignty did away with their free ports. (c) Our prohibition laws destroyed their rum industry and damaged their bay-rum industry. (d) Our preferential sugar rates did away with their waning sugar trade. About all they have as a pleasant memory is that the Navy and its Medical Department took the load and did its job in a disinterested way so that sanitation, vital statistics, medicine, surgery and every other feature of our important work was taken care of in a highly satisfactory manner.³ By executive order of February 27, 1931, supervision of the Islands was transferred from the Navy Department to the Department of the Interior. The Colonial Council of St. Thomas and St. Johns has recently passed a resolution *beseeching* the President and Congress to return the administration of the Virgin Islands to the Navy Department.

So much for our own insular possession. Now to refer briefly to the value of an efficient medical service in effecting easy diplomacy as between our government and a foreign state. The example of Haiti will illustrate. Her story is a long one and as an independent state it started in 1804 when the government was wrested from the French. From that time until 1915 the Haitian State was in more or

less constant turmoil, there were frequent periods of bloodshed and as a result of all this we were in grave danger in 1915 of coming to clash with European governments on the basis of the Monroe Doctrine. In 1915 when Mr. Bryan was Secretary of State we intervened there. To show the seriousness of the conditions, there had been seven presidents of the Republic during the seven years immediately preceding our intervention, although the term for which a president was elected was seven years. Some of these had been murdered, others deposed by revolution. The last one, President Guillaum Sam, conceived the idea of placing all of his political enemies in jail and then giving an order to have them executed. This was actually carried out in part but the matter did not end the way he had hoped, for soon after, his place of residence was surrounded by a mob and in order to escape from it Sam made his way over the wall separating his residence from the French legation next door. The mob invaded this French territory, dragged Sam to the ground floor and murdered him. It then proceeded to drag his remains about town for the benefit of souvenir hunters. In order to prevent foreign governments landing troops there, the United States did this necessary thing and from then until 1931 we have had control of the several departments of the Haitian government.⁴

By more perfect treaty arrangements in 1921 we were enabled to increase the benefits to the Republic of Haiti because we were given greater authority. From 1921 until the Forbes Commission went to Haiti in 1930, the affairs of the state were steadily in the ascendant. As a result of the Forbes report, we agreed to get out of Haiti,

and speaking now for the Medical Department alone, I can say that there was never during the sixteen years of medical cooperation there anything except praise on the part of the Haitian citizen from péon to president. The Forbes Commission, which was advised and counselled by no less an authority than Victor Heiser, stated in its report that a Public Health and Sanitary Service which is a model of devotion and efficiency has been organized and maintained. It was the recommendation of this Commission that the public health organization should be kept intact so that the great benefits which had come from the highly efficient Service d'Hygiene could be perpetuated under U. S. Naval medical officers "after the present treaty expires."⁵ In spite of this, the health organization was one of the first to go by the board, and in October, 1931, the connection of the United States Naval Medical officers was practically discontinued and the Public Health Service turned over to Haitian officials.

In Haiti the coffee crop has, for many years, been the principal item of income for the treasury. During the past four or five years the price of coffee has dropped to such an extent that it has strained the Haitian treasury markedly. It was, therefore, unfortunate that our connection with the Haitian government in such a basic proposition as its public health should have to be discontinued at a time of national stress.⁶

It is interesting to recall that in the administration of President Grant the Republic of Santo Domingo was offered to the United States on a gold platter, figuratively speaking.⁷ It is very probable that the Haitian State would have come under our government at that time also. At the time

in question, 1870 to 1872, President Grant sent a commission to study the situation in the two republics and report to Congress. This commission, after an exhaustive study of conditions, reported favorably upon the project, but Congress would not permit the absorption to take place. The President's Message to the Senate on this report is a model of well-reasoned prophecy.

The Island of Haiti is the queen of the Antilles and we may surmise what would have resulted had the United States taken it over at that time. No one will ever *know* what the result would have been but it is reasonable to think that this large island, equal in area to the state of South Carolina, would have blossomed if it had been under a forward-looking government for these past sixty-one years.⁸

During the sixteen years that medical men of the United States Navy were in contact with the officials of the Haitian government, many friendships were made with the medical men of that republic. Scores of our medical officers who have served in all parts of the Republic of Haiti have learned to respect their medical men and their citizens generally. The medical officers of the Haitian government at the present time have had an enormous load of responsibility cast upon them, and it is believed that their funds to carry out this work have been very materially limited since the American officers were withdrawn. This, together with their limited experience, will cause the high standard of excellence which was attained before 1931 to be adversely affected, and the fine structure for public health which the Forbes Commission found in Haiti must retrograde.

In the Virgin Islands the people are petitioning for a return of the

Naval Government. In the Philippines it is thought that the majority of Filipinos is averse to terminating our intimate relations there and in Haiti there has been evidence of a disinclination to ratify the treaty discontinuing our connection with that State. These facts are evidence that there is something wrong with our system. A "street car diagnosis" of what is the matter could perhaps be stated about as follows: We have no continuing policy as regards such matters as this. Our policy changes with the administration. In other words, it is national and not universal. Each administration has its own plan of action and it is possible for one administration to terminate all of the good that has been conferred upon an insular or alien people by an enlightened policy established by another administration. In medical practice if a consultation is called upon a patient and the consultants agree that a certain line of treatment is necessary in the best interests of the patient, it is incumbent upon the physician who has the patient in charge to carry out the agreement arrived at.

Our government is so sensitive to the criticisms of interested politicians, that it tries to act upon the whims and fancies of many who have ulterior motives in connection with the affair at hand, and in this way are wobbled off of the policy which would be of greatest good to the patient, namely, a continuance until he is cured.

We are much in the position of the ancient Babylonians whom Herodotus pictures thus:

I come now to the next wisest of their customs; having *no use for physicians* they carry the sick into the market place; then those who have been afflicted themselves by the same illness as the sick men, or seen others in like case come near and advise him about the disease and comfort him, telling him by what means they

have themselves recovered of it or seen others so recover. None may pass by the sick man without speaking and asking what is his sickness.⁹

In other words, the bystanders have been permitted to defeat the specialists, for untrained in medicine, they were nevertheless allowed to make the diagnosis and prescribe the treatment which is, of course, an impossible state of affairs. Other governments have a continuing national policy in matters of such vital importance and it is believed that our government would do well to give this serious consideration and work out a plan so that such national policy could not be disturbed by the vicissitudes of party politics.

REFERENCES

1. The World's Almanac and Book of Facts, 1933, p. 573.
2. TANSILL, C. C. The Purchase of the Danish West Indies. Balt., Johns Hopkins Press, 1932.
3. BUTLER, C. S. and HAKANSSON, E. G. Some first impressions of the Virgin Islands, medical, surgical and epidemiological, *U. S. Naval Med. Bull.*, 11: No. 4, 465-475, 1917.
4. BUTLER, C. S. Co-ordination of medical problems; medical education; public health and hospitals in the Republic of Haiti. *Bull. Assen. Amer. Med. Colleges*, 3: 46-58, 1928.
5. Report of The President's Commission for the Study and Review of Conditions in the Republic of Haiti, Wash., U. S. Govt. Printing Office, 1930. This commission is referred to in the manuscript as the Forbes Commission.
6. BUTLER, C. S. The medical needs of the Republic of Haiti at the present time. *U. S. Naval Med. Bull.* 24: No. 2, 269-279, 1926.
7. Report of The Commission of Inquiry to Santo Domingo. Wash., Government Printing Office, 1871.
8. HAZARD, S. Santo Domingo, Past and Present, With a Glance at Hayti. N. Y., Harper, 1873.
9. Herodotus, with an English Translation. Loeb Classical Lib. Ed., B. 1, 197, p. 251.



BOOK REVIEWS

ROUNDAABOUT HARLEY STREET, THE STORY OF SOME FAMOUS STREETS. By Cyril Phillips Bryan, M.B., B.CH. London, John Bale, Sons & Danielsson, Ltd., 1932.

For many years Harley Street has been preeminent as the residential center for the leading members of the medical profession in London and Wimpole Street has in more recent years been its close second. It is because of this that Harley Street has figured in so many novels and plays as the place of residence of numerous fictitious doctors, and that its fame has spread throughout the world as a medical center. But Harley Street has many more historic associations than those which are strictly medical. Its neighborhood included Tyburn, of tragic memory, Marylebone, a name which calls up the famous gardens, once so popular as a place of amusement, and many other famous streets and places, or squares. In this delightful little volume the author has written with love as well as knowledge of the many houses or localities in the ancient district which recall memories of famous persons or incidents.

The inside cover contains an excellent map, a glance at which suffices to show the richness of its historic associations. Mr. Bryan's little book will prove a delightful companion with which to prowl around one of the most historically interesting parts of London. It is much more wide in its scope than the ordinary guide-book, containing a great amount of historical information and many little known anecdotes, chosen with discretion and good taste. We can recommend it heartily not only to the actual traveller but also to the "fender traveller," who sitting at home anticipates a visit to London in the future, or wishes to recall a sojourn in the metropolis of the English-speaking world.

BIOGRAPHISCHES LEXIKON DER HERVORRAGENDEN ÄRZTE DER LETZTEN 50 JAHRE. Herausgegeben und bearbeitet von I. Fischer, Privatdozent an der Universität Wien. Zugleich Fortsetzung des Biographischen Lexikons der hervorragenden Ärzte aller Zeiten und Völker. Lief. 6-11. Berlin, U Urban and Schwarzenberg, 1932.

The volume containing Parts 6 and 7 has the same high standard as the previous ones. While a few men of note, among them some Americans, are omitted, it is surprising how well and how even-handed the international medical field of biography is covered. Like its predecessors the volume contains a number of photographs of distinguished physicians, four to a plate. Here too the attitude of the editors has been international.

Parts 8 to 11 complete the Biographisches Lexikon. The second fasciculus contains a short appendix of names previously overlooked and also the names of those who have died since the Lexikon was begun. As the work is virtually a "Who's Who" of medical men the world over, it will be of value to public and private libraries.

DAVID RIESMAN.

THE BOOK OF DELIGHT. By Joseph ben Mèir ibn Zabara. Translated by Moses Hadas. With an Introduction by Merriam Sherwood. N. Y., Columbia Univ. Press, 1932.

The name of Zabara is but little known to students of medical history, and his writings contain nothing in the way of an original contribution to medical science, yet this volume will be read with interest by anyone who is interested in the period when the Arabians dominated medical science because its contents express in a characteristic way some of the chief features of Arabian medicine. Joseph ben Mèir ibn Zabara's name is not mentioned

in any of the standard general histories of medicine, and references to him in the works of his contemporaries and immediate successors must be very rare, yet this translation of his most important works is a welcome addition to the English version of medical texts of the Arabian period. In the most interesting Introduction to this volume Merriam Sherwood tells us that Joseph ben Mèir ibn Zabara was a Jewish physician who flourished in Barcelona during the latter half of the twelfth century, and that is practically all that is known of his life. This volume contains not only "The Book of Delight" but also Zabara's medical poem "The Seats of the Soul." The translations by Moses Hadas are most delightful renditions which one feels preserve the flavor and zest of the original. The especial interest of the "Book of Delight" is as a source-book, or at least a version, of many of the anecdotes or fables which permeate medieval literature, and except Chapter VII, which is a collection of sayings and short parables, contains but little concerning medicine, but the "Seats of the Soul" is a medical composition which sets forth the currently received Arabic conceptions of anatomy and physiology in a concise but striking manner. Of course, it is Galenic, that is, Galen as interpreted by the Arabians. We encounter the four humors and the natural, animal and vital spirits, arising from the liver, heart and brain. We will confine ourselves to one quotation, indicative of confusion as regards the veins and arteries, but also showing that physicians of that epoch felt the pulse:

God hath made the heart master over all the members;
The throbbing veins are its agents,
For they are ordered from its source,
And are watchful over man's every deed.
Therefore the physicians when of his two arms
The veins they feel, understand all a man's nature
Thereby; for by a straight line are they drawn
(from the heart),
And of flesh and hair are they bare.

An interesting comparison may be made between the anatomical and physiological concepts contained in the "Seats of the Soul," and those in the "Regimen Sanitatis Salernitanum." As one would expect they are practically identical. We can heartily commend a reading of this most interesting volume. Aside from its medical interest the stories told in "The Book of Delight" are pleasant enough to justify its title.

PHARMAZEUTISCHE ALTERTUMSKUNDE UND DIE SCHWEIZERISCHE SAMMLUNG FÜR HISTORISCHES APOTHEKERWESEN AN DER UNIVERSITÄT BASEL. By Dr. Joseph Anton Häfliger. With 53 Illus. Basel, B. Wepf & Co., 1931.

In a brief foreword the author explains the founding of the pharmaceutical museum of the University of Basel. Although begun only in 1924 this museum has already achieved a high position through its unusually rich collections. It is extensively used in the teaching of pharmacy in the University. There are only a few similar collections in the world: one in Amsterdam, one in Nuremberg; the Wellcome Museum in London has a division of the History of Pharmacy, and there is also a good collection in Paris, and an excellent one, although not mentioned in the book under review, in the Philadelphia College of Pharmacy.

The main part of the book is made up of a detailed list of the articles in the collection and is followed by a number of pictures of the rarer objects in the Museum.

DAVID RIESMAN.

DIE EMBRYOLOGIE IM ZEITALTER DES BAROCK UND DES ROKOKO. By Tadeusz Bilikiewicz. Arbeiten des Instituts für Geschichte der Medizin an der Universität Leipzig, Bd. 2. 1932.

After a short preface dealing with the history of embryology before Harvey, the author discusses the development of embryology from Harvey's day until the epochal discoveries of Caspar Friedrich Wolff (1733-1794). Due credit is given to

the English thinkers of the Middle Ages, Roger Bacon, Duns Scotus, William of Occam, who by directing the mind away from speculation to observation prepared the way for the great discoveries of the seventeenth and eighteenth centuries. The "English" approach to knowledge is well typified by Harvey whose overpowering personality, to use the author's phrase, is a direct outgrowth of the English spirit. The words Baroque and Rococo, which are very popular with German writers, are borrowed from styles of architecture and decoration characteristic of the seventeenth and eighteenth centuries respectively. The author deals exhaustively with the various embryological theories that were the object of such heated discussion during these two centuries and well into the nineteenth: the preformation, the animalculist, the ovist theories and others which seem so fantastic to us today. Bilikiewicz's work was stimulated by Professor Henry E. Sigerist and made possible through a stipend of the Rockefeller Foundation.

DAVID RIESMAN.

THE HISTORY OF DERMATOLOGY. By William Allen Pusey, A.M., M.D., LL.D. Illus. Springfield, Ill., Charles C. Thomas, 1933.

This scholarly work is the first history of dermatology written in English and is a thoroughly commendable presentation of a valuable department of medical history. Beginning with the earliest available medical writings, the Smith and Ebers papyri, Dr. Pusey shows what a very large proportion of these interesting documents is devoted to diseases of the skin, and proceeds to show that in Greco-Roman, Arabic and Medieval times medical authors continue to write much on the subject, especially in its cosmetic aspects. Probably during those periods diseases due to personal uncleanness and lack of hygienic precautions were more prevalent than in the present time, and as skin lesions are apt to be conspicuous,

attention to them was frequently awakened. Pusey gives an interesting account of the contributions to dermatology made by some of the truly great investigators who worked during the two hundred and fifty years between 1500 and 1750. Some of their studies were of great importance, such as Bonomo's famous description of scabies in his letter to Redi, and Astruc's great work on syphilis, and the anatomists, Stenson, Malpighi and Physick elucidated the structure of many of the glands and of the skin.

In the last half of the eighteenth and the early years of the nineteenth century dermatology was developed in a remarkable way. The Austrian Plenck and the Frenchman Lorry wrote excellent treatises on skin diseases, and in 1785 Robert Willan began the series of remarkable publications which, as Pusey states, mark the foundation of modern dermatological classification, in which he was ably seconded by his disciple, Bateman. Alibert founded the great French school of dermatologists about 1800, and his work was continued by Hardy, Bielt and Rayer, and in 1839 Schönlein, of Berlin, discovered that favus was due to a fungus, thereby starting a new line of investigation of great importance. In Vienna, Hebra was the founder of a great school of dermatologists. In the United States the first institution for the treatment of skin disease was the Broome Street Infirmary, New York, founded in 1837 by H. D. Bulkley and John Watson. It was soon followed by other institutions of a similar kind and Pusey dwells with pride on the succession of Americans who have made notable contributions to dermatology during the succeeding years. A valuable feature of the book is a very full "historical index of dermatology," which will prove of great use to all subsequent students of the history of the subject. Dr. Pusey's book is well illustrated and attractive in format. It is a notable contribution to a most important subject.

THE BOOK OF MANCHESTER AND SALFORD.

Written for the Ninety-seventh Annual Meeting of the British Medical Association in July, 1929. President, Professor A. H. Burgess, M. SC., F.R.C.S., D.L. Manchester, George Falkner & Sons, Ltd., 1933.

This very tasteful souvenir volume contains much of interest to the medical historian. It is a compilation of articles by different persons dealing with the various activities of a great city, especially as would be expected stressing those relating to medicine. The work has been well carried out under the charge of a committee of which Dr. Brockbank was chairman. We can only refer to the portions dealing with Manchester's medical history, and this is a record of which any city might well be proud. Of her many distinguished physicians probably the greatest was Charles White, the great obstetrician, who was really the first to recognize the true nature of puerperal fever and to suggest rational measures for its prevention in 1773, long before Semmelweis or Holmes was born. He was also the first to correctly describe phlegmasia alba dolens. White was a skilful and daring surgeon, and was also distinguished as an anthropologist. The author of the best known code of ethics, Thomas Percival, was a contemporary of White's and served with him on the staff of the Manchester Infirmary, as was also John Ferriar, whose work on Sterne's writings made a great sensation. A younger man who was on the staff of the Infirmary was Dr. Roget, the author of the "Thesaurus." The high professional standards set by these men have been maintained by a line of distinguished successors.

The Manchester Royal Infirmary was founded in 1752, largely through the efforts of Charles White, and it is the oldest teaching hospital in England outside of London. In 1757 the institution, then the Manchester Public Infirmary, began taking apprentices to study medicine, and today it is the hospital in which the undergraduate medical students of

the University of Manchester receive their clinical instruction. Charles White and his son Thomas gave courses on anatomy and midwifery in White's museum and dissecting rooms and in the Infirmary during the seventeen-eighties, and in 1814 Joseph Jordan organized a successful anatomical school. In 1824 Thomas Turner founded the Manchester School of Medicine which later developed into the medical school of the University of Manchester.

Manchester boasts many fine hospitals besides the Royal Infirmary, both general and special, and the Manchester Medical Society possesses a fine library. This little book is a worthwhile record of notable achievements.

CHAPTERS IN AMERICAN OBSTETRICS. By Herbert Thoms, M.D. Springfield, Ill., Charles C. Thomas, 1933.

Beginning with the earliest records of colonial times this little book sketches various notable achievements which have marked the progress of obstetrics down to the present day. It does not pretend to be a complete consecutive history of the subject, but the author has picked out certain salient men and given a good account of their activities. He has chapters on William Shippen, Jr. and Samuel Bard, who may be justly regarded as the founders of obstetric teaching in this country; John Stearns, who introduced the use of ergot in scientific obstetrics; William P. Dewees, the most authoritative author on obstetrics of his day in the United States; Oliver Wendell Holmes and the contagiousness of puerperal fever; Marmaduke B. Wright and his work on cephalic version, and Walter Channing and anesthetization in childbirth. This little book contains only 90 pages of text, but Dr. Thoms has the art of condensation, and presents his subjects in an adequate manner. Though much of the matter is familiar, the work of Stearns, Wright and Channing deserves to be brought into more prominence and Dr. Thoms has done them justice.



ANNALS OF MEDICAL HISTORY



FRANCIS & TAYLOR, 1115 AVENUE OF THE AMERICANS, NEW YORK 17, N.Y.

ANNALS OF MEDICAL HISTORY

Editor: FRANCIS R. PACKARD, M.D., Philadelphia

CONTENTS OF NEW SERIES, VOLUME ONE, 1929

THOMPSON, *Symptoms of Life of a Physician in the 18th Century*; JOHNSON, *William Porter Memorial Lecture. Introductory*; COHEN, *Development of the Harvey Circulation*; BURNER, *Appreciation of the Medical Profession and the Divine Origin of Medicine*; CHANCE, *Scapula Lethal J.D.*; KREMERHAAR, *Bibliographical Manuscript Pertaining to the Discovery of the Circulation of the Blood*; WOOD, *Medical Library*; WOOD, *Historical Epochs*; HARVEY, *History of Hemostasis*; MILLER, *William Bessmore and His Book*; BURN, *Dr. James and His Medical Dictionary*; MOORE, *General History of the Riquelme Rodin, Garcia de Otis, Riquelme, Arnold Adolf Berthold, Tournay, Five General Medical Treatises Published in the Western Hemisphere*; PRACHET, *John Fower; Power, Memorial Group of the Harvey Festival*; KREMERHAAR, *Book Oliver—Duchess de Beaulieu*; WOOD, *Julius Millington*; ROBERTSON, *"Case of Health" and its Author*; Sir Thomas Brown; ADAMS, *Albrecht von Graefe*; PARSONS, *Heinrich Medicine*; HAMMERTY, *Anatomical Knowledge of the Ancient Hindus*; GUDGER, *Illustrations of Comparative Osteology*; BERTIN, *Charles Edward James*

WARR, *Das of Galen's Book*; PRYFIELD, *A Royal History, Gaping, Suffering, Suffering Tombs*; MASON, *Deases of Ancient Man*; CHANCE, *Copy of James North*; STRICKER, *Reminiscences from the Early Days of the Pennsylvania Hospital*; WARR, *Lenny GARRISON, Ed. News in Medical Philosophy*; PRYFIELD, *Biography in the Light of History*; POK, *McGowan, Surgery at the New York Hospital One Hundred Years Ago*; ROBERTSON, *Samuel Johnson's Medical Experiences*; MCDONALD, *Evolution and its Middletons*; Philip Spang; BRYCE, *TAYLOR, S. W. Macall*; WARR, *Statutes Devising a Potentia Superior*; DEDICATION of the Hippo, WARR, *David Ramsey*; WARR, *Incident in Early South Carolina Medicine*; TOWN, *Medical Physician*; FURBERWALD, *Manuscript Copies of the Medical Works of Isaac Judson*; DIPLOMA of a Jewish Graduate of Medicine of the University of Padua in 1697; BERNARD, *Historical Manuscript*; SHRYOCK, *Origin and Significance of the Public Health Movement in the United States*; PRADWELL, *Ninian Pechney, M.D.*; MOORE, *Surgery in Pre-Columbian Peru*

CONTENTS OF NEW SERIES, VOLUME TWO, 1930

ROBERTSON, *Sir Thomas Browne*; SODERSON, *Sketches*; CAUMBER, *Original Drawing of the Title Page of Vesalius Fabrica*; CHANCE, *On Hippocrates and the Aphorisms*; MAJOR, *History of Taking the Blood Pressure*; FRANCIS, *LEISTO Spallanzani*; HALL, *General and Medical Science 100 Years Ago*; BURNER, *Orific—Pioneer Toxicologist*; SCARLETT, *John Paul Merve*; The Physician as Revolutionary; WARR, *Symptoms*; PRADWELL, *Ninian Pechney*; LEA, *Roman Architectural Hygiene*; COOPER, *The Medical School of Montpellier in the 14th Century*; HARRISON, *The Irish School of Medicine*; JACOBSON, *John Collier Latham and His Relations with Jonathan Oliver*; Explorer; CAUMBER, *Elizabethan Anatomical Medicine*; MILLER, *Apollis*; DRAGMAN, *The Medical Wisdom of Nathaniel Hawthorne*; ROBERTSON, *Medical Friendships, Clubs and Societies*; WILSON, *Alphonse Francois Marie Gervais HUME, Medicine in China, Old and New*; HOWELL, *Doctor George Fendley and His Times*; BURNER, *Cervantes, His Life and Works*; SHRYOCK, *Public Relations of the Medical Profession in Great Britain and the United States 1600-1850*; Incubators in New York Academy of Medicine, Library of Washington University School of Medicine, Medical Lib-

rary of the University of Rochester, Cleveland Medical Library Association, Boston Medical Library, Lane Medical Library, Stanford University; WARR, *The Physician of the Dance of Death*; HALL, *Stephen Girard and the Great Epidemic of Yellow Fever in 1793*; DEDICATION, *History of Substances known as Aphrodisiacs*; MILLER, *History of Syphilis*; MONTGOMERY, *Historical Prose*; Author of a Poem Called Syphilis; HARRISON, *Historical Survey of Gonorrhea*; LEBOLD, *Artemis the Cappadocian*; His Contribution to Diabetic Mellitus; JONES, *Practice of Medicine Among Our Aborigines*; LLOYD, *Benjamin Rush and His Critics*; PRACHET, *William Hunter's Historical Cases*; CAULFIELD, *Infant Welfare Movement in the Eighteenth Century*; ROGERS, *The History of Craniotomy*; TOWN, *Williams, An Ancient Syphilis Stoll from France in Paris*; PRYFIELD, *John Kew, Reticence of a Genius to To becalm and Obedient*; MAJOR, *Papyrus Ebers*; MOORE, *Tuberculosis and Genius as Manifested in R. Francis of Asolo*; GOLDSTEIN, *Influence of Claude Bernard on Physiological Concepts*; MIDDLETON, *John Spang*; DODGE, *Parasitism*; Lewis Morgan; VON STORCK, *Essay on the History of Bile*; HARRISON, *Significance of the Scientific Content of the Air*

CONTENTS OF NEW SERIES, VOLUME THREE, 1931

CORNER, *Rea of Medicine in Salerno in the 12th Century*; THOMPSON, *Letter from a Physician of Valencia to His Two Sons*; BADMANN, *An Ancient Physiological Problem*; ART, *Christopher Wilhelm Hufeland*; CUTLER, *James Service in the Old Days at Children's Street Hospital*; SODERSON, *Thomas Dale, M.D.*; FRANCIS, *Antonio Vallini*; SCHUPPE, *Moore Museum*; WARR, *Physician of the Dance of Death*; Medical Incubators in the Library of the University of Michigan Medical School, John Cowan Library of Chicago, Library of the College of Physicians of Philadelphia, Library of the Royal College of Surgeons of England; POWER, *Touchstones and the Cure of the King's Evil*; EAST, *Max Johann Sigismund Schelling*; MACHY, *Louis Levin WARR, Reformation of the Charges of Commissions Made against Galen*; BURN, *Galen Major, Landmarks in the History of Lead Poisoning*; MILLER, *The Præmonition Institution of Thomas Beddoe*; ROBERTSON, *History of Chalcids and Its Therapeutic*; HARRISON, *Edwin Smith Surgical Papyrus*; FRANCIS, *Ch. Alphonse Laveran*; DRAKE, *Pop and Pandas*; RING, *John Francis DeLong*; A Frontier Physician; PONDOLY, *Physician Physicians*; CLEMENS, *Notes on English Medicine*; George IV—Henry VIII; SARMA, *Hindu*

Medicine and Its Associates

BARKLEY, *Dr. Samuel Brown*; HALDIN-DAVIS, *Foundations of British Dermatology*; JONES, *John Galtie Armstrong*; THOMAS HOLLEY CHANCE, *Nicholas Colaparte*; PRACHET, *Two Unpublished Letters of Matthew Dallas, M.D.*; MOORE, *Tuberculosis and Genius—Francis Thompson*; HARRISON, *An Unpublished Diary of Edward Jenner*; HARRISON, *Perian Monograph on Syphilis*; KREMERHAAR, *Brunnus Darwin and His Relation to the Doctrine of Evolution*; CAWADAN, *Five Epidemics in Galilee*; WARR, *Dr. J. C. NGH and the Transmission of Yellow Fever*; WARR AND GILBERT, *Theodore Kocher*; SHUTMAN, *Richard Don's Toxic Pathology*; The Adventurous Goldberger; MONTGOMERY, *Naming of Alopecia Areata*; BROWNING, *Relation of Physicians to Early American Geology*; LAMBERT, *Phineas Hodge and Francis Quarles and the Purple Island*; LURE, *Carl von Voit*; MEYER and POLSKY; CHANCE, *An Ophthalmic Clinic of 1857 A.D.*; FRANCIS, *Richard Lower and His "De Cordis"*; BURNER, *Anton Tschischin KRAEDEL*; HARRISON, *Morgan, Tuberculosis and Genius—Voltaire*; CARSON, *The Late Professor WARR, Giganter and Accomplish*